660.5 N2 v.12 pt.3

NATIONAL PETROLEUM NEWS

VOL. XII CLEVELAND, OHIO, JULY 7, 1920 No. 27

Alcohol Minor Factor In Motor Fuel Field, Investigating Solon Is Told

By Special Correspondent
WASHINGTON, July 3

ONE of the popular myths floating around the Capitol, particularly among the group of members of the House of Representatives whose constituencies smack strongly of the farming industry, is that sometime commercial methods will be brought into use by which alcohol will be manufactured from farm refuse and other vegetable matter such as waste connected with the lumber industry.

Every once in a while this story is dragged out and, redressed in bright and rosy colors, it circulates around until someone with a sordid commercial mind and a fundamental knowledge of chemistry hits it a knockout blow and puts it to sleep for the time being.

It came to life again when Representative Knutson of Minnesota a few weeks ago, when talk of a possible motor fuel shortage this season was at its height, introduced in the house a resolution which was passed calling for an appropriation to investigate the possibility of developing a gasoline substitute, one such possibility to be looked into that of substituting alcohol for gasoline as motor fuel.

J. L. Lewis, petroleum technologist of the Bureau of Mines, recently wrote Representative Knutson a letter in which he pointed out that alcohol and other substitutes derived from vegetable matter could be but a minor factor in the motor fuel situation for an indeterminate period to come and that, while there are immense quantities of waste vegetable matter thruout the country, this waste vegetable matter is widely scattered and in only a few places is concentrated sufficiently to make it feasible to manufacture alcohol from it in competition with gasoline.

Alcohol Fails in Gas Engines

Lewis also pointed out that it is mechanically impossible to use straight alcohol as fuel in an engine developed to operate on gasoline, and that alcohol to be available as motor fuel must therefore be blended with gasoline. Alcohol will not blend with gasoline except in the presence of a considerable quantity of benzol or some similar product. Even with alcohol available, he points out, it would be necessary to produce large quantities of benzol from coal to blend with the alcohol and make it an interchangeable fuel with gasoline.

Production of benzol for 1920, he estimates at 95,000,000 gallons, about 2 per cent of the total gasoline supply for the year. Even were alcohol available at prices which allowed its use as motor fuel, Lewis points out, the output of benzol or similar by-products from coke ovens would have to be greatly increased to allow the use of alcohol in sufficient quantities to add materially to the motor fuel supply.

At present, he said in his letter to Representative Knutson, a comparatively small quantity of alcohol produced from sugar refinery wastes is being placed on the market in competition with gasoline. This is being sold as alcohol, benzol, ether and gasoline blends.

Refinery Efficiency Real Solution

Lewis' object in writing Representative Knutson was not primarily to discredit the alcohol-motor fuel theory, but to point out what he believes to be the real solution of the problem—the working out of more efficient methods for taking petroleum from the ground and for transforming it into motor fuel. He takes up particularly the development of commercially feasible cracking processes to allow the breaking up of a greater proportion of the residuum now selling as fuel oil for burning under boilers into suitable motor fuel.

He states that there is at present only one largely used cracking process—the Burton process, which will operate only on one quality of oil, which is only a small proportion of the heavier oils produced in this country. He believes that from 40 to 50 per cent of the petroleum products now being used in a most inefficient manner for steam raising should be made available for manufacture into synthetic gasoline by the development of commercially practical cracking processes, which would double the quantity of gasoline obtainable from our present production of crude.

The letter addressed by Lewis to the Minnesota representative, is as follows:

"The present situation of high gasoline prices and threatened shortage, has been caused by an increase in the uses of gasoline faster than the increase in production and importations of crude petroleum, from which it is derived. We now find that we cannot

Louisiana Acreage Sold By Rowe To Britisher

By Special Correspondent

SHREVEPORT, LA., July 7. — For the consideration of $2,500,000, part to be paid on transfer of title, the properties of Frost Oil Company and part of the properties of the Bill Rowe Oil Company, Inc., have been sold to Joseph A. Chown, of London, England, according to announcement by J. H. Levy, counsel for the Frost and Rowe interests.

In the purchase price $1,400,000 is paid for the Frost properties, including 60 acres in proven Homer territory, principally in Sec. 31-21-7, and 115 acres elsewhere in Claiborne parish, also an interest in 1500 acres, in Webster and Bienville parishes.

Besides part of the Rowe Company's holdings, including 200 acres in Sec. 22-19-13, Bossier parish, 1,000 acres in east Texas (Bethany district), and nearly 100 acres in Wichita county, Texas, the transaction includes part of Rowe's personal holdings in Oklahoma.

Published Every Wednesday at 812 Huron Road, Cleveland, Ohio, by the National Petroleum Publishing Company.

25 cents a copy, $5 a year in the United States, $6 in Canada and $7 in other foreign countries. Trade mark Registered U. S. Patent Office. Entered as second class matter January 17, 1910, at Cleveland, Ohio, postoffice, under act of March 3, 1879.

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obtain sufficient gasoline from the old processes of refining crude oils to meet present and anticipated needs. Fortunately, however, processes have been developed in recent years for producing synthetic gasoline from the heavier and less volatile portions of the crude oils, from which processes some fifteen per cent of the four billion gallons of gasoline produced in 1919 was derived. Synthetic gasoline can also be manufactured from oil shales and gasoline substitutes are being manufactured from by-product coke ovens, and can be made by low temperature destructive distillation of coals and lignites.

"I am strongly of the opinion that the problem of obtaining greater supplies of gasoline will be solved primarily by obtaining supplies from mineral matter, and that alcohols and other substitutes derived from vegetable matter can be but a minor factor in the situation for an indeterminate period of time.

"Obviously, the most satisfactory solution of the problem would be to obtain greater supplies of crude oil, and for this reason our government should give serious consideration to the encouragement of our nationals in acquiring supplies abroad. This government should also do its utmost to provide technical and scientific guidance for the industry at home for the obtaining of more supplies of oil from our own fields. It is a fact not commonly known even in the oil industry, that the wells obtain but a small proportion of the oil which exists in the sands and that probably not more than from ten to twenty per cent is commonly extracted. Oil is found in sands and sandstones in pores which are almost miscroscopic in size. When the gas which forces this oil out of the pores of the sands is exhausted the remaining oil is held like water in a sponge and the well ceases to yield oil in commercial quantities altho a larger part of the eighty to ninety per cent of the oil remaining can be obtained by the proper methods.

Greater Yield from Sands

"Some exceedingly promising methods have been in use for a number of years, which have proved undisputably that a great deal more oil can be obtained from our oil sands. But there are numerous important problems which will call for the best scientific and technical research for their solution before a full measure of our oil supplies can be obtained. I am strongly of the opinion that one of the first considerations in insuring a future supply of gasoline should be of this eighty to ninety per cent of the oil which is now being left in our oil fields, and that this government should properly conduct the necessary technical and scientific investigations and foster the use of improved processes in every way possible.

"Another problem which should receive immediate consideration is the manufacture of synthetic gasoline from heavy oils. At the present time there is only one process which is being largely used—the so-called Burton cracking process, held under patent by the Standard Oil Company of Indiana. This process can use only one quality of oil, which is but a minor proportion of the heavier oils produced in this country. Some forty to fifty per cent of all the petroleum which is now being used in a most inefficient manner for steam raising would be made available for manufacture into synthetic gasoline by the development of a commercially practical process for cracking these heavy oils into synthetic gasoline. The discovery of such a process available to all refiners might readily double the quantity of gasoline obtainable from our present production of crude oil and defer any apprehension of a gasoline shortage for many years to come.

"A considerable quantity of gasoline substitutes is now being obtained from by-product coke ovens. It is expected that ninety-five million gallons of benzol will be produced in 1920, which will be about two per cent of the total gasoline supply for the year. Everything should be done to encourage and foster this industry. Still larger quantities of gasoline substitutes can be made by retorting the coals and lignites which are now being consumed as they come from the mines. If the available oils could be extracted from every ton of coal and lignite before they were consumed it would add very greatly to the supply of motor fuel.

"I wish to point out here that the production of benzol from coals is likely to be inseparable from the utilization of alcohols from vegetable matter, which you hope may be a solution of the motor fuel problem. It is a fact that the present gasoline using engine cannot use straight alcohol satisfactorily; also, it is going to be practically necessary that any substitute for gasoline as an engine fuel must be practically interchangeable with gasoline. To accomplish this purpose it is necessary to blend alcohol with gasoline. But alcohol will not blend with gasoline unless there is a considerable quantity of benzol or a similar product in the mixture. Therefore, unless some other solution of this problem is found it will be necessary to produce large quantities of benzol from coal in order to blend the alcohol with gasoline and make it an interchangeable fuel.

"At the present time but a comparatively small amount of alcohol produced from sugar refinery wastes is being placed on the market in competition with gasoline. This is being sold as alcohol, benzol, ether, and gasoline blends. However, the quantity of alcohol obtainable from sugar refineries is negligible compared with our gasoline needs.

Waste Material Scattered

"It is true that there are immense quantities of waste vegetable matter thruout the country, and were it possible to gather the refuse from the farms and from the lumber camps and other places, a tremendous quantity of alcohol could be obtained. But it is unfortunately true that this waste vegetable matter is widely scattered and in few places is it concentrated enough that it seems commercially feasible to make alcohol in competition with gasoline.

"From a quantitative standpoint, petroleum, coal, and oil shale are likely to be the cheapest raw material for making gasoline substitutes. It must be borne in mind that the obtaining of gasoline substitutes alone will not solve the problems resulting from the failing petroleum supply. Gasoline is but one of the esesential products from petroleum. An automobile or farm tractor would be even more helpless without the lubricants obtained from petroleum than without the gasoline. As you are aware, there is not a moving part in any piece of machinery in the United States which does not take lubricants which are derived from petroleum.

"I am strongly of the opinion that it would be a mistaken policy to limit the investigation of gasoline substitutes to vegetable matter and that emphasis should be placed on the investigation of the problems which I have mentioned. I would, therefore, suggest that serious consideration be given to encourage the development of gasoline and gasoline substitutes: (1) by increasing the recovery of oil from our oil fields; (2) by developing processes for making synthetic gasoline out of heavy oils; (3) by encouraging the development of processes for making gasoline and gasoline substitutes out of oil shales, coals, lignites, peats, and (4) by developing processes for making alcohols, ethers, etc., from waste vegetable matter.

"In closing, I would call your attention to the fact that with the exception of (4), such a program concerns primarily the Bureau of Mines whose function is the investigations of mineral industries for the purpose of conserving the natural mineral resources and increasing the efficiency in the extraction and utilization of the mineral substances."

Contract Not Signed With Cochrane, Harper

By Special Correspondent

WASHINGTON, July 5. — The contract between the navy department and Cochrane, Harper & Company for 3,000,000 barrels of fuel oil, it is expected, will be completed and signed in a few days. It has been slow work to arrange the bond of $3,500,000 given by Cochrane, Harper & Company, covering all the property, together with a specific mortgage for $1,500,000 on the refinery at Fall River. In addition the refining company is to give a bond for $1,000,000 for the faithful performance of the contract, under the terms of which the company is provided with capital for enlarging its plant.

In behalf of Secretary Daniels, who, with other members of the cabinet, is attending the San Francisco convention, it has been said that, under the war powers which are still in full vigor because we are still at war with Germany, Secretary Daniels could have handed over money from the treasury without the formalities that have been observed in making the arrangement with Cochrane, Harper & Company.

According to belief at the navy department, deliveries of fuel oil will be begun about September 1. The contract is so worded that if the contracting companies do not move with the speed the secretary of the navy thinks they should show payments may be held up until they do acquire the speed, all of which makes it possible for the navy department, in the event the head of it is so minded, to work a forfeiture of the plant and a taking over by the department of a refinery, notwithstanding the refusal of the senate, in the current appropriation bill, to sanction the use of public money for the refining of oil.

At the beginning of December the navy department will be the owner of nearly 7,000,000 barrels of Panuco crude, and a bond on the assets of the Cochrane, Harper & Company properties, calling for $3,500,000, with a fidelity bond of $1,500,000 calling for the faithful performance of the agreement to deliver fuel oil at $2.08 per ba- which, with the price paid by the navy for the crude, for getting it to the refinery and refining it, is held to make up a price of $3.246 per barrel.

The bond of $3,500,000 is issued by Cochrane, Harper & Company as agents for the various allied companies. The mortgage is on the specific property of the refining company in which the Olsen process is to be tried out.

California Labor List Now Includes Everything But Slush Pit Foreman

LOS ANGELES, July 1.—Demands for increases of wages ranging from 30 to 50 per cent and from $2.50 to $4.50 per day, effective from today, together with many new classifications of employes—such as the inclusion of common labor (watchmen, janitors, pick and shovel men, gate tenders, etc.), warehouse help and clerical workers, heretofore unclassified and paid on the basis of individual bargaining—which would add enormously to the payrolls, have been served on the oil producing, transportation, marketing and refining companies of California.

The demands were submitted to the president's mediation commission to be presented by that body to the committee of operators dealing with the labor situation to serve as a basis for the meeting slated for July 20 in San Francisco, at which the federal mediators are to endeavor to get the employes to agree upon a scale of pay and classifications of workmen for the fiscal year beginning today.

Upon receiving the demands from the mediation commissioners and after consideration in meeting, the committee of operators has returned the proposal to the mediators, advising them that the same are entirely unsatisfactory, that they cannot even be considered or discussed, and suggesting that the workers' committee should revise the scale "to show only the differentials which they think should exist among the various classifications—no matter what the base wage may be."

The proposed scale, so summarily rejected, calls for a minimum wage of $7.50 per day for roustabouts (semi-skilled workers in labor peculiar to the oil industry), the lowest grade considered under the agreement which expired June 30. Under the old agreement the regular minimum was $4.75, with an extra payment of 25 cents, now being paid to those whose services were satisfactory, and who did not leave in such a way as to handicap operations—in other words, who were loyal. This bonus extended to all classified employes, not excluded by name, and in all references to last year's scale of pay therein the amount of the bonus will be considered as a part of the regular pay, thus last year's minimum for roustabouts is to be considered as having been $5; for drillers $9, altho $8.75 was paid at regular times, and the balance now being distributed.

Thus, it will be seen that the workers want a 50 per cent raise for roustabouts.

For common laborers a minimum of $7.25 is demanded. Under the last agreement these had to make individual bargains. The operators insist that this rule shall continue in effect.

For drillers, cable and rotary, $11.50, a raise of $2.50, is demanded; for tool or bit dressers, $10.50 per day; circulator men on cable rigs, $8; derrick men on rotary rigs, $10; rotary firemen, $8; rotary firemen (if required to do anything but firing), $9; rotary helpers (whether bits are dressed in the derrick or not), $8.50.

Besides the above, the rejected demands call for a new classification, that of head driller, to be paid $13.50 per day. The nature of the work for which he is expected to be paid $2 more than other drillers is not set forth. Presumably, it is intended to require that the driller on one of the three shifts employed shall have the title and draw the pay with nominal authority over the others as an excuse for the extra pay.

Rig builders call for $12 per day, their helpers $11, with a so-called head rig builder $14, and the rules submitted and rejected require that all repair work shall be paid at builders' wages and that there shall be at least four builders for every helper. Well cleaners call for $11.50, their helpers $10.50. A new classification, that of "well agitator," is demanded, such men to be paid $11.50, the same as drillers. Well pullers want $8, so-called "head well pullers" $9, each pulling crew to consist of a head puller and three pullers, with the proviso that if used on other work when there is no pulling to be done their wages shall not be reduced. When drilling crews do the rigging up they shall receive drilling wages; when others are employed for such work the "head rigger" calls for $9, his helper for $8. First-class engineers want $8.50, second-class $8.25 and 50 cents above first-class pay, or $9, when called upon to do firing; water tender, $8.25; firemen, pumpers and oilers, $8; combination pumpers, $8.75.

For dehydration and casinghead extraction plants wages asked range from $8 for engineers, firemen, oilers, pumpers and trap tenders at small booster gasoline stations, to $10 for gas engine and pump repairmen. At gas wells well and line tenders call for $8, meter repairman for $9.

Stablemen want $7.50, with $8 for so-called "head stablemen"; teamsters, $7.75 to $8.25 for two, four and six-horse teams, respectively; truck and tractor drivers and helpers, $7.75 to $8.50.

For boiler washers, no chipping, $7.50; with chipping, $8.50; garage repair men, $9.50; head repairmen, $9.75; helpers, $8; car and truck oilers and washers, $7.50; steam and gas engine and pump repairmen, $10, and their helpers, $8; field electricians, $9.50 and $10, with helpers, $8; head electricians, $10.50 and $11.50.

In field, pipe line and refinery mechanical shops the rejected scale calls for increases as high as $4 and more. The wages asked are as follows: Acetylene welders, $9.25; heavy fire blacksmiths (any blacksmith working on new or repair work in connection with a power-driven hammer), $13; light fire blacksmith (all others), $10; helpers (heavy fire), $8.25; helpers (light fire), $8.25; heavy hammer driver (2,000 pounds or more), $8.75; light hammer driver, $8.50; boilermaker, $10; boiler inspector, $300 a month; boilermaker helper, $8; machinist (tool joint turner), $10.50; first-class machinist, $10; pipe machine operator (six-inch or more), $8.75; pipe machine operator (less than six inches), $8.50; salvage men (not machanics), $8.50; all machine shop helpers, $8; all other skilled mechanical trades (plumbers, pipe fitters, carpenters, etc.), $11; helpers in such trades, $8.

All clerical help, never before considered as affiliated with the labor organizations, calls for a minimum wage of $7.50 per day, for $8 after one year's service. The scale is to apply to male and female clerks alike. As no further classification is attempted, it is presumed that the scale is intended to apply to all, from trained bookkeepers to stenographers and telephone girls, perhaps to the office boy, too. Chief clerks want not less than $8.50. All clerks asked for Sundays, legal holidays and Saturday afternoons off with two weeks annual vacation on full pay.

In the lines peculiar to refining the wages range from $7.50 up to $12, and include stillmen (shift work) and first relief man (day work), $9; stillmen's helpers, $8.25; firemen, tailhouse man and second relief man, $8; compounder and greasemaker, $8; assistant compounder, $7.75; head greasemaker and filler, $8; can solderers, $7.75; asphalt foremen, $10; lead burners, $12; foremen coopers, $12; coopers, $12. Within these limits there are numerous other classifications all calling for wages within the figures stated above. Workers in lines common to refinery, field and pipe line departments call for the same wages in all.

Revise Gasoline Prices in Arizona, Nevada

SAN FRANCISCO, July 3.—The shortage of motor fuel on the Pacific coast is causing the Standard Oil Company of California to revise its schedule of prices in Nevada and Arizona to allow it to market in the former state principally gasoline from Wyoming refineries and in the latter gasoline shipped in from the Mid-Continent field.

According to a statement by K. R. Kingsbury, president of the company, the acute shortage in California has made it impossible to supply in all of Standard of California territory motor fuel produced from California crudes, and the company is buying some Mid-Continent and some Wyoming gasoline, selling those products at points in its territory where the rail haul is shortest.

To take into account refinery prices for these products, as well as the increased freight rates, the Standard of California, effective June 30, advanced gasoline prices in its Reno, Nev., territory from a half cent to four cents a gallon. At its Reno main station the advance was three and a half cents, bringing the tank wagon price to 31 cents. Cases of two five-gallon cans are 43 cents.

In Phoenix, Ariz., territory the advance has ranged from three to six and a half cents. At the Phoenix main station the advance in tank wagon prices was five cents, bringing the price to 34 cents. Cases of two fives are 46½ cents.

Petersburg Boasts One Of Most Complete Service Stations In East

Staff Special

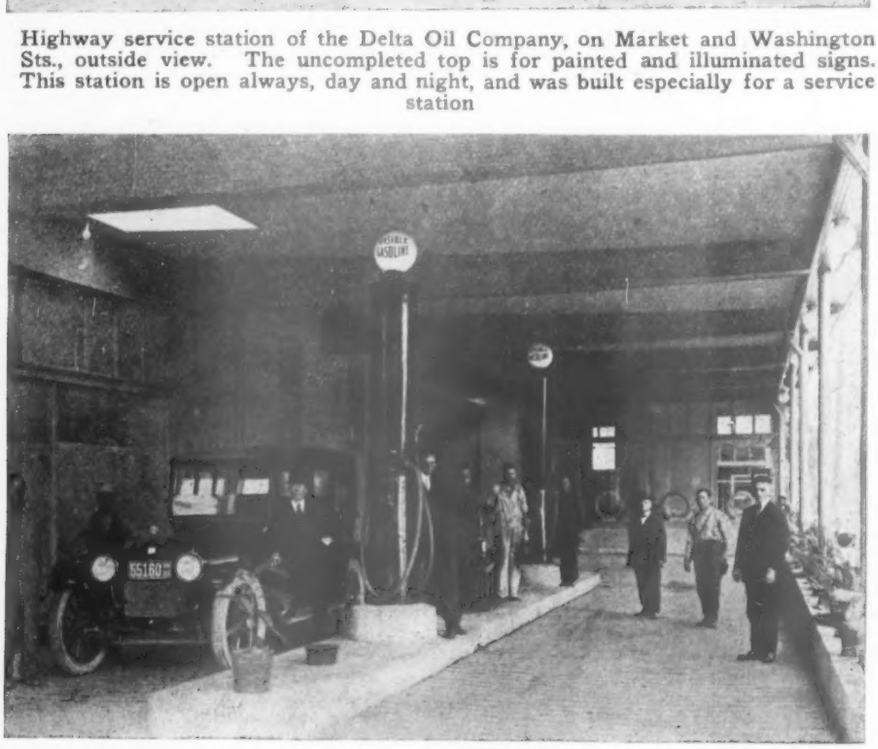
PETERSBURG, VA., July 5.—One of the most distinctive in type, as well as one of the most completely equipped service stations on the Atlantic coast has been opened in Petersburg at the corner of Washington and Market streets, by Delta Oil Company.

The covered drive-in has been embodied in the construction, with the unusual feature of space large enough to care for four automobiles at one time. Each car stand is completely equipped, having besides the use of one of the two duplex filling towers, facilities for supplying air and water to the car without moving from the stand. The stands are under large sky-lights and at night are brightly lighted electrically. A wash-stand equipped for quickly cleaning a car and a battery service department are features of the station.

Delta Oil Company prides itself most upon the adequate space provided for incoming and outgoing cars and the speediness of service given to local patrons and to tourists traveling over the Dixie Highway has brought the station a wide reputation. Motor accessories and tires are carried in a department of the station and in connection with this, tire vulcanizing is offered.

While the inclusion of women's rest rooms in plans for service stations is becoming common in the middle west, Delta Oil Company is one of the few that have provided this in the east. The rest room is decorated with flowers and ferns and a maid is in attendance thruout the day.

Highway service station of the Delta Oil Company, on Market and Washington Sts., outside view. The uncompleted top is for painted and illuminated signs. This station is open always, day and night, and was built especially for a service station



Highway service station of the Delta Oil Company, on Market and Washington Sts., inside view, double drives. Showing the two duplex filling towers which supply gasoline to four cars at one time

Inquiries Of Ability To Supply Gas Oil

Staff Special

NEW YORK, July 5.—In response to a resolution adopted at a recent emergency meeting of the American Gas Association, R. L. Welch, general secretary and counsel of the American Petroleum Institute, has addressed 125 oil companies on the eastern and Gulf coasts, asking them whether they will be able to take care of the requirements of their customers for gas oil for the rest of the year.

The urgency of the situation is reflected in public opinion, Secretary Welch said, and public authorities doubtless will be on the alert to take whatever steps are necessary to supply gas for domestic consumption. This might, in turn, lead to a demand for some form of regulation or control of the oil industry.

The institute's action in asking for information on the ability of the various companies to meet the requirements for gas oil was prompted at a recent conference of several representatives of the oil industry held at the office of Mr. Welch, and the general opinion of the conference was that if the oil companies continue to take care of the gas companies, which are their present customers, the situation will be fully met.

In the resolution of the American Gas Association, the point was made that the supply of artificial gas has been imperiled by the increase in the use of oil for other purposes than the manufacture of gas and President Cortelyou, of the association, was asked to name a committee to confer with representatives of the oil producing and refining interests; to seek an agreement on the allocation of oil for gas-making purposes, and to decide, as a recommendation to the association, what differential in the selling price of gas must be temporarily established to meet the present emergency.

The committee named by President Cortelyou consists of P. H. Gadsen, vice president United Gas Improvement Company, Philadelphia; Samuel Insull, People's Gas, Light & Coke Company, Chicago; W. R. Addicks, Consolidated Gas Company, New York; Randal Morgan, United Gas Improvement Company, Philadelphia; A. M. Barnes, Cambridge Gas Light Company, Cambridge, Mass.; Henry G. Bradlee, Stone & Webster, Boston; P. S. Young, Public Service Gas Company, Newark, N. J.; H. C. Abell, American Light & Traction Company, New York; C. L. Holman, Lacede Gas Light Company, St. Louis.

Mr. Gadsen is chairman of the committee, and a conference between the committee and Secretary Welch will be held when replies to the institute's letter to the oil companies have been received.

Thorne Protests Against Valuation Used By Railways In Rate Increase

Staff Special
WASHINGTON, July 5

SHARP issue with the basis for computations of the value of railroads used by the railroads in their request to the Interstate Commerce Commission for increased freight rates is taken by Clifford Thorne, general counsel for the American Independent Petroleum Association and commerce counsel for the Western Petroleum Refiners' Association, in the memorandum submitted to the Interstate Commerce Commission.

Mr. Thorne first takes up the subject of the increased rates, stating that this is the first billion dollar case ever tried before the commission or any other tribunal, as the increase asked is to produce $1,017,776,995 annually. At the same time, railroad labor is demanding a billion-dollar increase in wages, but, says Mr. Thorne, it is distinctly understood that the rate advance now asked for will not care for whatever wage increase that may be ordered by the labor board; that will be followed by another freight advance.

During the past three years the total annual interest charge on the public debt of the United States has increased from $23,000,000 to $1,053,000,000. If the railroad stockholders and bondholders, as well as railroad labor, are successful in their campaign for the higher charge to shippers, and hence to the public, the added transportation burden will be double that of the total annual tax burden.

"The issue," says Mr. Thorne, "is not whether an advance in rates should be granted, but the issue is how much of an increase is justified. Those whom I represent are absolutely united on the proposition that whatever advance is granted should not be excessive in amount, and that for this purpose a check of the railroad figures is justified."

Value of Railroads

Taking up first the subject of the value of railroads, Mr. Thorne makes the following points:

The basis for all the computations of the railroads in this case is their so-called property investment account, which they claim represents the value of their properties and represents for the United States $20,616,573,399. This is believed to be excessive by several thousand million dollars, because

1. The carriers have failed to make any allowance for depreciation and have assumed that all their cars, locomotives, rails and ties are today new. Such a method of appraisal is unjust and has already been repudiated by the Supreme Court of the United States.

2. This single item of accrued depreciation for the railroads amounts to $995,384,881 and should be deducted from the base figure representing the present value of the railroads.

3. If all the railroad securities should be raised to par, below which they are now selling, and $3,000,000,000 were added to the total of such securities, the sum would be approximately that of the value assumed by the railroads, or, in other words, the public is asked to regard the value of the railroads as $3,000,000,000 greater than the total par value of all their stocks and bonds outstanding.

Market Value of Railroads

In arriving at the commercial value of the railroads, Mr. Thorne has used the market quotations of all securities quoted and the par value of those not quoted. These computations, he says, cover more than 90 per cent of all the securities outstanding and the ratio thereby arrived at has been applied to the rest. In this manner, the market value of the American railroads has been figured at $12,200,000,000, the railroads desiring to add $8,000,000,000 to this.

The memorandum submitted by Mr. Thorne uses the term "present value," as meaning the cost of reproduction new, less depreciation, of all property other than land, plus the present value of the land, used for carrier purposes. The present value of those properties he was able to obtain information on, equals $2,691,949,667, equivalent to 83.21 per cent of their alleged property investment. If this is typical for the country as a whole, says Mr. Thorne, the present value of all American railroads is approximately $17,155,050,000, as compared to the book value of more than $20,600,000,000 used by the railroads.

Included in this present value, however, is the land donated by the federal government and the state of Texas, aggregating more than 146,000,000 acres. It is now proposed, Mr. Thorne points out, to capitalize this vast acreage and make the public pay an annual tax on its present value, a value which costs them nothing.

As a possible offset to working capital, materials and supplies which the railroads have suggested that an allowance be made for, Mr. Thorne points out that when the railroads were taken over by the government they had an unappropriated surplus in such form as to be readily available, aggregating more than $800,000,000. As another offset, he submits the fact that much of the properties has been built out of earnings. Figures for the Pennsylvania system, verified by its officials in another proceeding, shows this amounted to $300,000,000 for that one company. The commission has held that such items should not be capitalized for the purpose of justifying increased rates.

Capitalization of Standard Return

Mr. Thorne suggests that the standard return guaranteed to the carriers during the war period and adding thereto the value of additions made to property since December 31, 1917, and also the investment in non-federal controlled lines. Adopting the foregoing method, capital-

Dow Argues For Joint Rate On Crude Oil From Kentucky

By Special Correspondent
WASHINGTON, July 6. — Arguments in behalf of the oil industry in 1920 Advanced Rate case were made by Fayette B. Dow, for the National Petroleum Association on July 3, and in behalf of the Western Petroleum Refiners Association on July 6, by Clifford Thorne. The latter, on June 26, put in statistics to show that the railroads are not in as bad a way as they have suggested, altho there was no disputing the fact that there must be an advance in rates to enable them to bear the burden put on them by Director General McAdoo and Director General Hines.

Mr. Dow confined himself largely to a plea for joint rates from the Kentucky fields to the refineries north of the Ohio and Potomac rivers, instead of combinations of full locals to the crossings and beyond. He pointed out that Edward Chambers, while director of the division of traffic in the Railroad Administration, promised joint rates somewhat less than the sum of the locals to and from the crossings, on condition that the eastern refiners obtain the approval of the rate committee in the territory south of the Ohio. There is no reason to question the good faith of Chambers, but any one familiar with the attitude of the railroad traffic men south of the Ohio should have known that they were the most hidebound men on earth and always insist upon having their full locals to the Ohio river. That invited the northern traffic men to call for their full locals. In the event the Kentucky fields yield such a quantity of crude as to become a big factor, it will be necessary to force waste upon the refining industry and the consuming public by forcing the construction of refineries in Kentucky, notwithstanding the fact that the country has money enough invested in refineries to meet its needs for years to come, if the railroads will make possible the carriage of crude to them on rates that will be just to them and to the public as well.

In his argument, Mr. Thorne again pointed out that if the railroads are permitted to make straight percentage increases in all rates on oil, they will increase the advantage of the refineries having pipe line connections and decrease the business of the railroads by sending the crude thru the pipe lines and also increasing the advantage of the refineries near the seacoast that distribute on short haul rates.

izing the standard return at 6 per cent, the total value obtained, says Mr. Thorne, is $16,611,050,649. If the railroads are entitled to earn 6 per cent upon this value under the Cummings-Esch act, their total net railway operating income should equal above all expenses and taxes, $993,663,036. This is equivalent to adopting the standard return and adding 6 per cent thereto on all additions to property subsequently made. In view of the entire situation, this method is probably the best, Mr. Thorne believes.

The standard return reflects what congress deemed to be reasonable for the properties at the time they were taken over by the government. In addition to that fact, the standard return is equivalent to the net revenues of the railroads during the most prosperous three-year period they have experienced in their entire history.

Revenues for Ensuing Year

Railroad officials, Mr. Thorne submits, have created a constructive or imaginary year by applying the unit costs anticipated for the next twelve months to the traffic of the year ending October 31, 1919, and have made full allowance for increased expenses without allowing anything for increased business. The same method, he says, was adopted by the railroads in 1917, in the 15 per cent case. In the fall of 1917, on re-hearing, it was shown that in 9 months the railroads had already earned $50,000,000 more than they had estimated they would earn during the entire year. Now, with the full returns for 1917, the railroads' estimate as to what they would earn, as compared with the actual returns for the year in the eastern district alone, involved an error of $95,000,000. Despite this, the railroads again propose the same method as the basis for their computations.

On these basic principles, Mr. Thorne shows that an increase of 12.85 per cent instead of 19.46, as estimated by the carriers, will enable the railroads of the United States to earn 6 per cent upon the value of their properties, arrived at by capitalizing the standard return at 6 per cent and adding the increases to property subsequently made. If the entire increase is confined to freight traffic the advance should be 18 per cent instead of 27.85, as proposed by the carriers.

"If our conclusions are sound, the railroads have exaggerated the percentage necessary. Applying their percentage to the earnings of the ensuing year would produce approximately $386,000,000 more than that required," says the memorandum.

"If our computations are substantially correct, in addition to the increased revenue derived from advanced rates which we have estimated to be $752,050,325, the carriers will also receive increased revenues from mail pay and from the increased volume of business, sufficient to bring their total net up to $996,663,036. This is above taxes, and above all increased expenses which the railroads have claimed in this case. There will be other increased expenses which they have not mentioned, including a car mile allowance on tank cars, and other items. On the other hand, there are some of these higher costs (for example, the additional cost of coal, also the $57,000,000 inter-company car and joint facility rentals, also the cost of lumber) which may be subject to very serious modification. We have accepted all their alleged increased expenses at their full face value.

"In the foregoing computations we have made no allowance for increased efficiency. This computation assumes that we can handle no more traffic today with a ton of coal than we did last year; that we can handle no more traffic per hour of labor than we did last year; that we can handle no more traffic per train mile or per car mile than we did last year.

"This computation assumes that the railroads under private operation are going to be no more efficient than they were last year under federal control.

"I cannot believe that progress has stopped. I believe that our estimates of the earnings under the proposed rates are conservative."

Change In Rates Not Basis For Reparation

By Special Correspondent

WASHINGTON, July 5.—The bare fact that the Railroad Administration commuted the 25 per cent increase in rates on petroleum and its products, decreed by President Wilson on June 25, 1918, into a specific increase of 4.5 cents per 100 pounds, is not ground for an order by the Interstate Commerce Commission for returning to the shippers of oil the difference between the rate increased by 25 per cent and the rate as it existed after the addition of 4.5 cents per 100 pounds.

Because it came to that conclusion the Interstate Commerce Commission on July 3 dismissed the complaint of the Atlantic Refining Company v. Louisiana Railroad & Navigation Company. The refining company complained against the rates from Crichton, La., to Pittsburgh as unjust and unreasonable.

The only comfort the complaining company obtained was an award of reparation because some of the joint rates via some of the crossings were in excess of the sum of the local rates via Jeffersonville, Ind.

The only point of general interest was that in which the company sought to establish the proposition that because the Railroad Administration consented to a commutation of the 25 per cent increase in all rates to a specific advance of 4.5 cents on each, it practically confessed that the higher rates were unreasonable. The rate regulating body said that that change was not a confession but a mere admission that the industry would be less distrubed by making a specific than a straight percentage increase. The amount of money taken from it was about the same under either plan of making the advances.

Superior Makes Deal With Two Companies

By Special Correspondent

LEXINGTON, KY., July 5.—At a meeting of stockholders in Winchester, Ky., at which about 90 per cent of both companies' shareholders were represented, the Rex and Pyramid oil companies voted to sell the properties to the Superior Oil Corporation (Atlantic Refining Company) of Cincinnati. The consideration is $2,500,000, of which $100,000 is to be held to meet any obligations that may arise. Negotiations by the Superior for the Rex-Pyramid properties has been under way for over two weeks. At one time it was thought the deal, so far as Rex Oil Company was concerned, was off because of the refusal of Rex stockholders to ratify the terms of sale. The Pyramid Oil Company was organized two years ago by J. M. Stevenson and L. C. Young, of Winchester, and V. J. Bulleit, of Louisville. It has paid more than 200 per cent in dividends. The Rex Oil Company was formed at the same time by associated interests. It, too, has been very successful. The companies have valuable holdings in Lee county.

Tide Water's Mexican Organization Operating

Staff Special

NEW YORK, July 3.—Since the organization of the Tide Water Oil Company's Mexican subsidiary, the Tidemex Company, S. A., which was incorporated under the Mexican laws last March, considerable headway has been made in putting the properties under its control in shape for active development work.

Drilling has already been started on two lots in a section of the Amatlan field that is regarded as semi-defined territory. The structure in this area has been passed upon by the company's geological experts as the most strongly indicative of high grade production. A 10-inch pipe line is being built, connecting the field end in the southern Amatlan district with the loading terminal at Mata Redonda, where the tankers will take on the cargoes for Bayonne. A narrow gauge railway has been constructed to facilitate the laying of the pipe line and will be operated in carrying materials for future works.

The Tidemex Company's holdings so far comprise a dozen parcels between the Amatlan and Zachamixtle districts and a much larger acreage in the western country, which is still classed as wildcat, but which has been subjected to intensive geological research before title was closed.

Frank Haskell, president of the new company, expressed much confidence in the outcome of tests on the properties, extending from Chinampa to Cerro Azul, believing that this territory would be developed into the mainstay of high grade production in the country. According to the geologists' reports, the structure indicates the probability of three pools over this area. There has been no oil well brought in south of Los Naranjos, but some of the companies have been extending their pipe lines and conducting operations in line with the promising trend of high grade productiveness toward the south.

The Tidemex Company, S. A., is entirely a Tide Water organization. In addition to President Haskell, who holds a similar office in the Tidal Oil Company, operating a refining and production plant in Oklahoma, its organization is made up of Roy W. Schenck, treasurer and manager; Edgar Ludgar, secretary; C. A. Miller, attorney, and the following directors: Frank Haskell, D. Q. Brown, James H. Jenkins, Roy W. Schenck and Edgar Ludgar.

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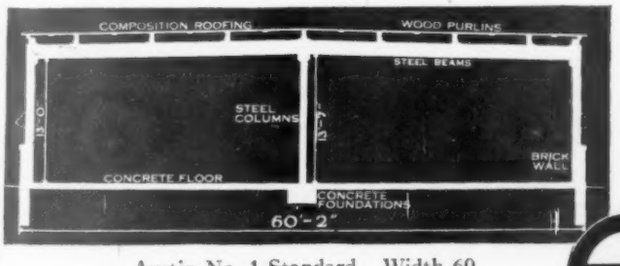

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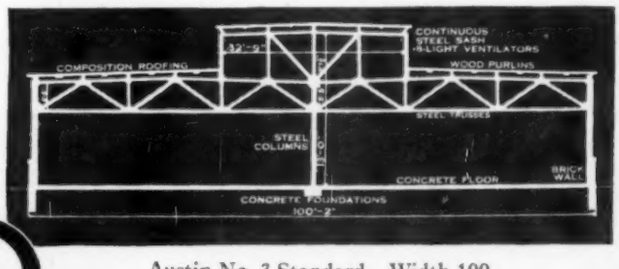

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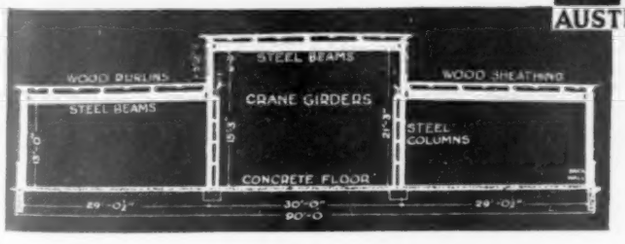

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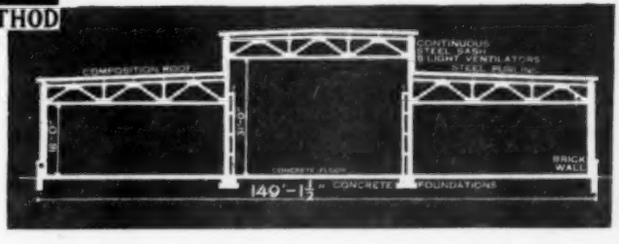


Austin No. 10 Standard. Width 150 feet. Length any multiple of 20 feet.

STANDARD FACTORY-BUILDINGS

Mr. Brown is second vice president and assistant treasurer, as well as a director of the Tide Water company, and Mr. Schenck and Mr. Jenkins have been identified with the Tide Water's western organization. Mr. Ludgar, an American, has been in business in Mexico for the last 20 years. Headquarters have been established for the new company at Tampico, in charge of Mr. Jenkins. This location will be used only for the movement of materials in connection with the field and shipping operations.

Gathers Data On Ramifications Of British Maneuvering For Oil

By Special Correspondent

WASHINGTON, July 5. — While this government has never made any representations to the British government, either formal or informal, on the obvious intention of the latter to procure a monopoly of the sources of crude oil supply, the governmental departments here are diligently accumulating all the data on that subject. When the time comes for such representations, there will be a valuable supply of material to be used as a foundation for suggesting that the British government can discharge some of its financial obligations to this country, totaling about five billion dollars, by transferring to Americans some of the oil territory the British government is picking up in territories that used to belong to Germany, and in countries that are supposed to be independent.

If bolshevik Russia does not drive the British out of Persia, that supposedly independent country will place all its real and prospective oil resources at the disposal of the British government.

The British government, as the owner of the Anglo-Persian Oil Company, now holds an exclusive concession, as to oil, for the whole of Persia except the five northern provinces. The concession runs to 1961, having been given in 1901, for a period of sixty years.

But the northern provinces are not to be allowed to get out of British control. Announcement has been made in London of a corporation with a capital stock of 3,000,000 pounds sterling to be known as North Persia Oils, Limited, which, according to the announcement, "has been formed to work in conjunction with the Anglo-Persian Oil Company." The announcement contains the further information that the Anglo-Persian company has been in further negotiations with the Persian government for more concessions, and that the further concessions are to be developed by the newly formed company. In other words, the whole of Persia is to become a part of the British Empire, in the matter of sources of supply of crude.

The Anglo-Persian company is also to develop the oil resources of Australia and the island of Papua, part of which was German, but which is now all British under a "mandate" from the League of Nations. Papua has been exploited to a small extent and the fact that there is petroleum on it has been known for nearly a generation.

The proposed arrangement for operations in Australia consist of the formation of a refinery company to be capitalized with 500,000 shares at one pound each, the commonwealth of Australia to subscribe for and be allotted 250,001 shares and the Anglo-Persian Oil Company the balance. Of the board of directors, three-sevenths are to be nominated and represent the commonwealth of Australia and four-sevenths are to be nominated and represent the Anglo-Persian Oil Company.

It is stipulated that the refinery company shall not enter into or be in any way concerned in or a party to or act in concert with any commercial trust or combine, but shall always remain an independent British business. Also, that it shall give preference to goods manufactured in the commonwealth of Australia in purchasing supplies and equipment.

The objects of the refining company shall be:

(a) The creation and development in Australia of the industry of refining mineral oil.

(b) The erection, equipment and operation of a modern refinery or refineries in Australia for refining mineral oil.

(c) The sale and disposal of the products of refining mineral oil and,

(d) Such other objects necessary or incidental to or expedient for the aforesaid objects as shall be approved by the commonwealth and the oil company, and set forth in the articles of the Association.

The technical and commercial management of the refinery shall be left entirely in the hands of the refinery company, which, after registration, is to equip and operate in Australia a modern refinery.

The Anglo-Persian Oil Company obligates itself to supply the refinery with crude oil as much as is required, but not exceeding 200,000 tons in any one year. The commonwealth engages to supply the refinery a like quantity from sources

Will Attend Automotive Events With Specially Designed Tank

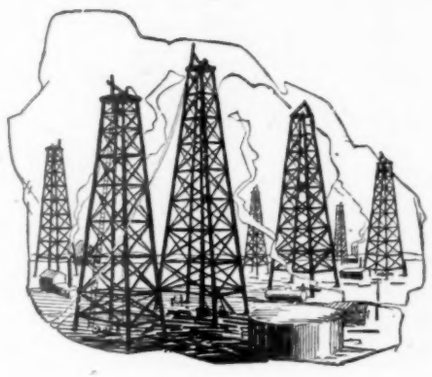
CHICAGO, June 19. — Combining practical service with an advertising medium on wheels, Sinclair oils will be present at all the big automobile racing meets, tractor demonstrations, state fairs and out-door events in the automotive industry this year. The service and the advertising will be carried to these events by means of a specially built truck tank mounted on a 7½-ton, 180-inch wheelbase chassis. The tank has a carrying capacity of 2,000 gallons, and was built by The Heil Company, Milwaukee.

The tank is elliptical in shape and has four compartments, each fitted with a 14-inch manhole and quick-acting emergency valve. The can-box, which is really a continuation of the tank shell, being of the same size and shape, is fitted for carrying lubricating oils, and is of such size that 24 five-gallon cans can be stored away, besides the necessary buckets and funnels.

The can racks are partitioned off so that there is room for 36 cans. Side cabinets are provided for carrying a tent and complete service equipment for any event which the truck may attend. All metal parts, such as the emergency valve handles, can rack rails, faucets, bumper and lamp are nickel plated. The tank itself is white, the chassis and cab, Sinclair green.

With the large number of auto shows, race meets and demonstrations of various kinds fostered by manufacturers of motors, it is seen that the truck tank will be kept in almost constant service thruout the summer and fall. It is planned to include a number of aviation meets in the itinerary of the motor fuel demonstration tank.

Truck tank which Sinclair Refining Company will use at automobile racing meets, tractor shows and demonstrations, state fairs and other outdoor events of interest to the automotive world



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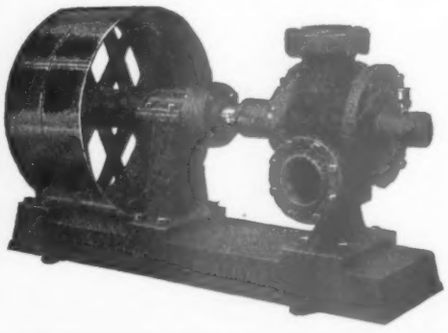

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within Australia as it becomes available to the commonwealth from sources within the commonwealth of Australia or in territory of or under the jurisdiction of the commonwealth or in any place over which the commonwealth has a mandate.

The commonwealth is to undertake to insure the full success of the development of the oil refining in Australia for as long as the prices charged by the refinery company are considered fair and reasonable and will:

(a) exercise or cause to be exercised such statutory and administrative powers as it deems advisable to prevent dumping and unfair competition by importers of refined oil from other countries;

(b) refund to the refinery company any customs duty paid by the refinery company upon the importation into Australia of crude mineral oil purchased from the oil company and refined in Australia by the refining company; and

(c) cause to be introduced into the parliament of the commonwealth and supported as a government measure a bill providing for the imposition of customs duties on crude mineral oil whenever in its opinion such action is necessary or advisable to prevent unfair competition with the products of crude oil refined in Australia by the refinery company.

In addition to this agreement with the Anglo-Persian Oil Company to consider the formation of a refinery, there is under discussion a partnership with the Anglo-Persian Oil Company in the exploration and development of the Papua Islands, both British owned and German portion, which has been acquired under mandate since the war.

Under this agreement the Anglo-Persian Oil Company is to send out a geological expedition to explore the country for oil, select drilling sites and conduct and superintend boring operations. The government of Australia is to defray the expense of this undertaking to not exceed one hundred thousand pounds.

It is stated in the "Argus," of Melbourne, Australia, under date of May 12, 1920, that tests have been made in a limited area in Papua the past year which yielded promising tho not commercial results. The essence of this agreement is that the commonwealth is to furnish funds and the Anglo-Persian Oil Company to furnish technical experience. The commonwealth, however, has not alienated any of its rights to the oil fields of Papua.

Hoden Oil Company's No. 29, on Michikawa in Akita, Japan, was completed at a depth of 672 feet with initial daily production of 1,500 koku (about 1,700 barrels). The well was drilled with cable tools and the oil showed a gravity of 16.5 Be.

The Scottish-American Oil & Transport Company, Ltd., and the Anglo-Persian Oil Company, Ltd., have entered into an agreement whereby the latter is to lend the assistance of its technical staff and its extensive transport, refining and distributing organization. An interlocking directorate has also been arranged.

The Petro Oil & Gas Company has been formed at St. Louis, with a capital of $100,000, to take over and develop territory in Washington county, Ill.

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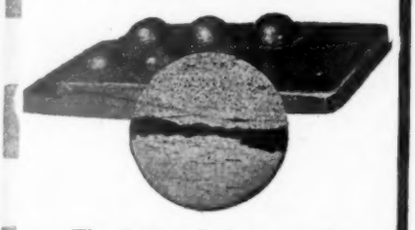

The picture tells the story. A riveted still cannot be made gas tight.

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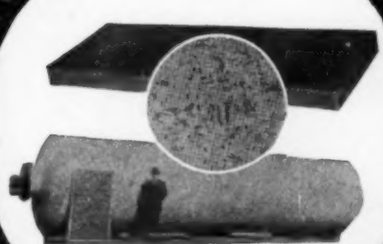
The microscope can find no joint—no seam. The still cannot leak, because it is a ONE PIECE STILL.



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Shipping Board Asks Bids On 28,000,000 Barrels Of Fuel Oil

By Special Correspondent

WASHINGTON, June 29.—A call for tenders on about 27,228,000 barrels of fuel oil per annum, and about 28,000,000 gallons of gasoline, has been issued by the Shipping Board. It desires grade C bunker oil, to be delivered at Atlantic and Gulf ports, but not at Pacific ports of the United States, and at the bunkering stations of the board throughout the world.

Bids are to be opened on July 15 and deliveries are to be made beginning about September 1. Detailed information as to specifications and terms of delivery, all of which have been published from time to time, may be had by application to M. W. Bowen, assistant director of the division of supplies and sales, of the United States Emergency Fleet Corporation, in this city.

With a view to getting the interest of all units in the oil industry, and developing whether there are any units that would like to go more extensively into the business of refining crude with a view to supplying fuel oil, the Shipping Board's invitation is to make the bids for one, three or five years, beginning about September 1.

There has been some consultation between the navy department and the Shipping Board. Under the war power, the government could make donations of money to persons willing to invest money in ventures of the kind the navy department and the Cochrane, Harper & Company combination are carrying forward, but it is not likely the board will go as deeply into the refining of oil as the navy. The reason for its abstinence is to be found in the fact that it is more dependent for its continued existence upon the will of congress than the navy department.

There is a large body in congress that is opposed, even to a government-owned merchant marine, for which there may be a necessity because other governments, in effect, own their merchant marine and the United States, if it desires to compete, is compelled to resort to the same methods that they employ.

Were the Shipping Board to take a plunge into a government-owned and operated oil refinery project, such as the navy is preparing to do, there might be an unpleasant reaction in congress. There is no such danger for the fighting marine branch of the service.

While tenders for delivery of fuel oil at domestic Pacific ports have not been asked for, should there be tenders of that kind, they will be given consideration. The idea, however, is that there is such feeling on the Pacific coast, on account of what Secretary Daniels has done in the way of trying to browbeat the industry into giving him fuel oil at less than the cost of production, there is practically no hope that there will be any bids by the industry in that part of the country.

The notice of the board's desire to receive bids was put out by it in the following form:

BIDS TO BE OPENED JULY 15, 1920

The Division of Supply and Sales, United States Shipping Board Emergency Fleet Corporation, invites tenders for furnishing such quantities of "C" grade bunker fuel oil as may be required for periods of one, three or five years beginning about September 1, 1920, for use by all ships under its ownership or control at ports and in approximate quantities as follows:

Name of Port	Quantities Barrels of 42 U. S. Gallons Month	Year	Name of Port	Quantities Barrels of 42 U. S. Gallons Month	Year
Boston	77,000	925,000	Port Arthur	19,000	225,000
New York	775,000	9,300,000	Galveston	40,000	475,000
Baltimore	125,000	1,500,000	Panama Canal	125,000	1,500,000
Norfolk	290,000	3,475,000	St. Thomas, V. I.	40,000	480,000
Philadelphia	250,000	3,000,000	Bermuda	10,000	120,000
Charleston	33,000	400,000	Ponta Delgada, Azores	31,000	375,000
Savannah	100,000	1,200,000	Brest, France	83,000	1,000,000
Jacksonville	31,000	375,000	Bizerta, Tunis	18,000	216,000
Mobile	31,000	375,000	Durban, S. A.	15,000	180,000
Pensacola	15,000	175,000	St. Vincent, C. V. I.	23,000	275,000
New Orleans	96,000	1,150,000	Rio de Janeiro, Brazil	42,000	500,000
	1,823,000	22,375,000		446,000	5,346,000

In addition to the above mentioned ports, tenders will be considered at all other United States domestic and adjacent ports from which bidder is prepared to make delivery.

The buyer agrees to place at the disposal of the successful bidder, tank steamer tonnage, at the government time charter rate of $6.50 per D. W. T. per month, in the amount necessary.

(1) To move crude petroleum from producing terminals to refining centers and,

(2) To move fuel oil supplied at any port from successful bidder's nearest refining center to such port or ports.

California Motorists Will Withdraw Charges Made Against Oil Industry

By Special Correspondent

LOS ANGELES, July 6.—Unwilling at any stage of the fight waged by the California Motor Dealers' Association against the oil industry, to believe that the gasoline situation on the Pacific coast is a real shortage and not a sinister plot to compel higher prices, the association has completed its own investigation.

As the result, the charges rushed to the Department of Justice by Senator Phelan will be withdrawn.

The findings of the association are confirmed by Robert Martland, secretary of state, who has completed a tour of the entire state, pursuing his inquiry among oil companies in every branch of the industry, consumers, railroads, and investigating every angle which might have a bearing, however remote, on the situation. Martland said he found

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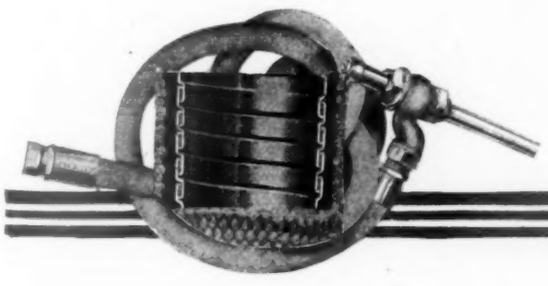

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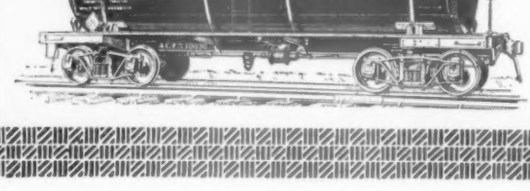

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the situation to be quite serious and the shortage to be real. He will submit his formal report in about two weeks.

If further vindication for the oil companies on the Pacific coast were needed, the report of the Department of Justice on the Puget Sound fuel oil charges, long pigeonholed in Washington, appeared at an opportune time. Arthur Dennison, former agent of the department, who made the investigation, has released here a complete synopsis of his report. Dennison is now practicing law in Los Angeles.

Dennison's synopsis absolutely vindicates five major companies operating on the coast—Standard of California, Union Oil Company, Associated Oil Company, General Petroleum Company and Shell Company of California. Dennison says their prices are reasonable, in view of the real and grave shortage of oil, that there is no evidence of illegal acts and no combination in restraint of trade and that the only point made which in the least supports the theory of such restraint is the fact that the companies were in position to form a price fixing combination. Such assumption, however, he adds, was declared inadmissible by the supreme court in the United States Steel Corporation case, and confining the report to actual conditions to the exclusion of what might have been done had the companies been so disposed, the industry is exonerated of the charges made.

Railroad Traffic Man Joins Oil Company

Clyde B. Barton

PITTSBURGH, July 5.—Clyde B. Barton has been appointed traffic manager of the Admiral Petroleum Company with headquarters at 215-216 Bessemer building here. Mr. Barton, before joining the forces of the Admiral company, was employed in the traffic department of the Pennsylvania railroad and has spent his entire working life in the traffic work. He was a member of the Fifth U. S. cavalry during the war.

Think Future Of Automotive Industry Depends On Heavier Fuel

"It is the conviction of the committee and those whose criticism has been of inestimable aid in working out the report that the very life of the industry (automotive) depends upon the adoption of some better means of vaporization and distribution of heavier fuels," said the automotive fuel committee of the Society of Automotive Engineers, in a report presented at the semi-annual meeting held recently at Ottawa Beach, Mich. The report, it was pointed out, is intended to be a guide in burning the more or less volatile fuels in old and present types of engines. Of first consideration to the committee was the subject of vaporization and the method suggested in the report is one of several means by which vaporization may be accomplished. The report shows the disposition of the automobile engine designers to work toward adapting their motors to fuel that is available.—Editor.

THIS report applies particularly to the preparation of mixtures from fuels of a wide range of volatility such as must be considered by the designer of engines and carburetors today. Up to the time that fuels of lower end-points than 302 degrees F. became uncommon, vaporization was not a difficult problem.

Modern carburetors are considered as being sufficiently accurate metering devices. With the heavier fuels commonly available, neither the heat accidentally available in carburetors, manifolds or from the combustion chamber walls is adequate for vaporization of the fuel under all conditions.

No general formula for the solution of a problem with so many variables, such as this, can supersede the judgment of an engineer. However, if engineers will work out the intake designs and apply the principles of design laid down in this report and temper each decision with judgment marked improvement will result in the operation and service of any motor car or truck.

The report, therefore, centers on the preparation of proper combustible mixtures from the less volatile gasolines and involves consideration of questions of vaporization and distribution.

Types of Mixtures

A dry mixture gives the best distribution and most complete combustion. With increasing end points of distillation for the fuels, there is an increasing need of heat application. Attempts to attain a thoroly dry mixture under all temperature conditions with high endpoint fuels may result in so high a temperature of the mixture that an appreciable decrease in maximum power is brought about by a reduced weight of air charge. With fuels of relatively high end-points, where the highest power output is desired consistent with the fuel characteristics, a fog mixture permits of excellent distribution and practically perfect combustion. A fog can exist at a much lower temperature than a dry mixture and will, therefore, permit of an increase in power by allowing a greater charge weight per stroke.

One method of approximating a fog consists in the application of sufficient exhaust heat to the limited sections of the inlet manifold at which there is a maximum separation of the liquid fuel from the mixture stream. The liquid separated from the air-stream is thereby vaporized by the hot surface and is then condensed in the mixture stream in the form of a fog.

Mixture Temperatures

Figure 6 represents the composite result of a number of typical tests in which mixture and exhaust temperatures were measured. At 250 r. p. m. and full load the exhaust temperatures runs from 600 to 925 degrees F.; at 1000 r. p. m., from 1025 to 1225 degrees F., and at 2000 r. p. m., from 1300 to 1500 degrees F.

At 250 r. p. m. with no load, the exhaust temperature is seen to be 400 to

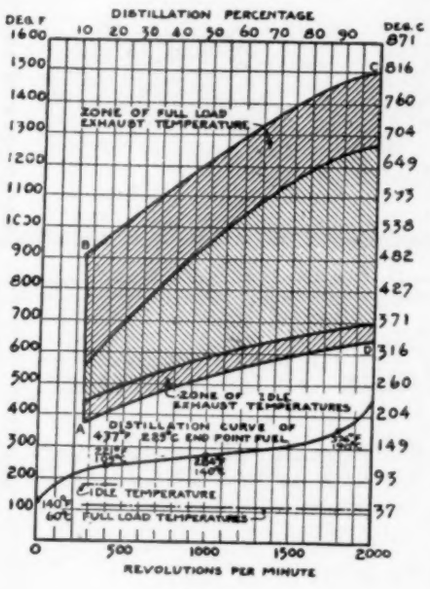

Fig. 6

450 degrees F. After long periods of idling it may drop 50 degrees below this. At 1000 r. p. m. it is 550 to 625 degrees F., and at 2000 r. p. m. it is 650 to 725 degrees F. Thus all variations of speed and load result in exhaust temperatures within the zone (ABCD) shown in Fig. 6.

Readings taken with mercury thermometers and pyrometers in the intake manifold are apt to be misleading on account of the wet condition of the mixture. The bulbs or thermocouples give wet-bulb readings which are too low. Just above the throttle there is a drop in temperature below that of the air entering the carbureter due to the vaporization of the lighter constituents of the fuel and the depression in the intake. When the mixture strikes the heated surface the fuel separates and vaporizes.

Readings of temperatures of mixtures entering the cylinder ports have been found to indicate that mixtures should have a temperature at full load varying with the distillation curve of the fuel. It will be found that if the temperature of the mixture entering the cylinder during full-load performance is about 150 degrees F. lower than the temperature at which 50 per cent of the fuel comes over during distillation, good results are attained. A remarkably constant mixture temperature is maintained by any of the designs shown in Figs 1 to 5 at full-load performance at all speeds, provided they are well worked out. The engineer must be guided entirely by the temperatures at no-load and full-load in relation to the results to guide him. At no-load performance a higher mixture temperature has been found to exist.

It is desirable to keep the temperature below a certain maximum to avoid poor accelerating ability and give desirable operation. When the temperatures of the mixture are too high there is very noticeable loss in power and a tendency of the engine to backfire when the throttle is closed quickly to extreme idle. Likewise when the temperature of the mixture entering the cylinder approaches 190 degrees F. lower than that at which 50 per cent of the fuel distills, there is decided tendency to manifold loading on hills or at low-speed pulling, regardless of the design of the heated surface. At this low temperature limit the influence of the cooling water temperature is of major importance. The values given above for mixture temperature conditions apply to best mixture proportions and atomization.

The lower grades of gasoline, of course, require a higher mixture temperature and more heat at the hot surface; hence larger heating areas are necessary. However, judging by a report recently issued by the Bureau of Mines, it appears reasonably certain that the petroleum industry can for the next three years provide fuel corresponding to the distillation curve shown in Fig. 6. So far as this fuel is concerned it would be wise to design apparatus to give a mixture temperature of 127 degrees F. under all weather conditions. While this will give a hotter

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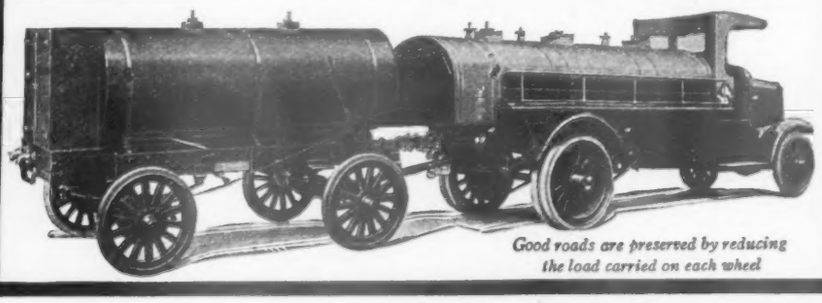

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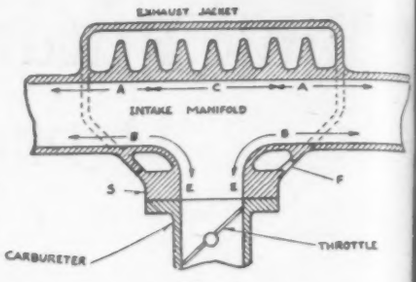

Fig. 1

mixture than necessary for lower end-point fuels, the fuel generally available should govern the design.

Application of Heat

Fig. 1 shows one type of heated-surface manifold. The object of this design is to provide a means of heating the liquid thrown out of the air-stream, with the least possible heating of the air itself. At slow speeds of the mixture the tendency is for the fuel to collect on the wall of the vertical section of the manifold and at the inside corner of the bent (B). At higher speeds the tendency is to collect in the horizontal part of the manifold. At higher speeds the liquid fuel strikes the manifold at (C) and alternately at (A-A), reaching points farther from the intersection as the speeds increase.

The amount of liquid fuel usually deposited can be vaporized on a comparatively small area of the heated surface and it is possible to heat this surface so hot by the use of exhaust as to crack the fuel or ignite the mixture. However, if the wetted surfaces at points (A), (B), (C) and (E) are all heated, the mixture may reach unsatisfactory temperatures.

It has been found of advantage in some cases to reduce the heating surface in an intake tee branch by resorting to jacketing as indicated by Fig. 2, in which one side only is exposed to the exhaust flame. A satisfactory result has been obtained with this jacketing when the exhaust jacket is connected to the exhaust manifold by a pipe which is not over 6 inches long. A valve for controlling the quantity of exhaust gas passing thru the jacket is strongly recommended with this design, to enable an adjustment for seasonable and atmospheric changes and for fuels varying in volatility.

The carburetor should be close to the heated section of the manifold. Since the throttle causes a separation of the fuel from the air-stream, it should be placed so as to minimize this effect and interfere least with the distribution. The best practice is to make the intake manifold short.

The vaporizing of fuel from a hot surface by exhaust heat is accomplished best by producing as high a surface temperature as possible. The limiting

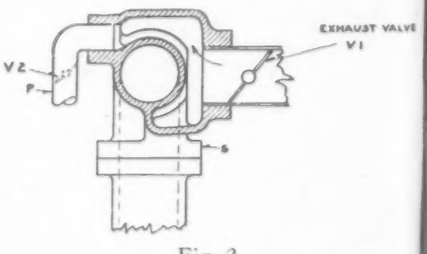

Fig. 2

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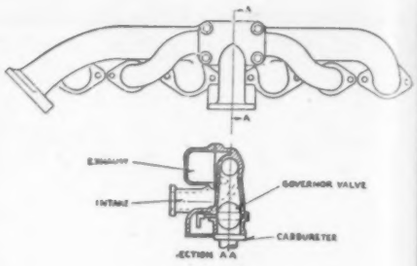

Fig. 3

factors are the temperature of the exhaust, the velocity of the exhaust gases, the extent of the surface presented to the exhaust flame, the conductivity of the metal and the amount of deposited liquid fuel. The liquid fuel is in contact with the heated surface for so short a time that it is necessary to have high enough temperatures to vaporize fuels of high end-point quickly, and to supply sufficient heat to maintain these temperatures of the hot surface. The temperatures of the exhaust and the heat available drop rapidly after the gas leaves the exhaust port.

The temperature of the mixture side should rapidly follow changes in the demands upon the engine. The surface must attain its temperature quickly in warming up and when changing from a full-load to an idle condition should quickly cool off. The heating surface should therefore have as small a capacity for retaining heat as possible; hence it should be of thin section. With too heavy a heated section, one in which the heat capacity is high, there is a tendency for the acceleration to be poor after a heavy pull.

Figure 3 shows the manifold on the Class B military truck engine, which produced satisfactory results. This is an example of a simple way of conducting heat at high temperatures to the mixture, but it lacks the means for an adjustment for seasonal or atmospheric changes of temperature, and may be found to be subject to certain defects listed in the above paragraphs. Seasonable adjustment can be accomplished by varying the heating of the air entering the carbureter.

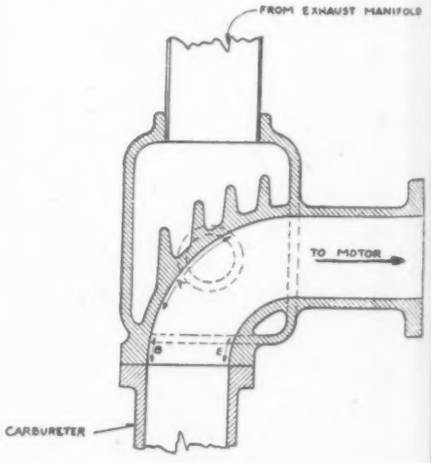

Fig. 4

Figure 4 illustrates an elbow construction for hot-surface manifold work. There are two areas (A) and (B), where fuel separation occurs. Slow speeds require heat at (B); higher speeds call

(Continued on Page 50)

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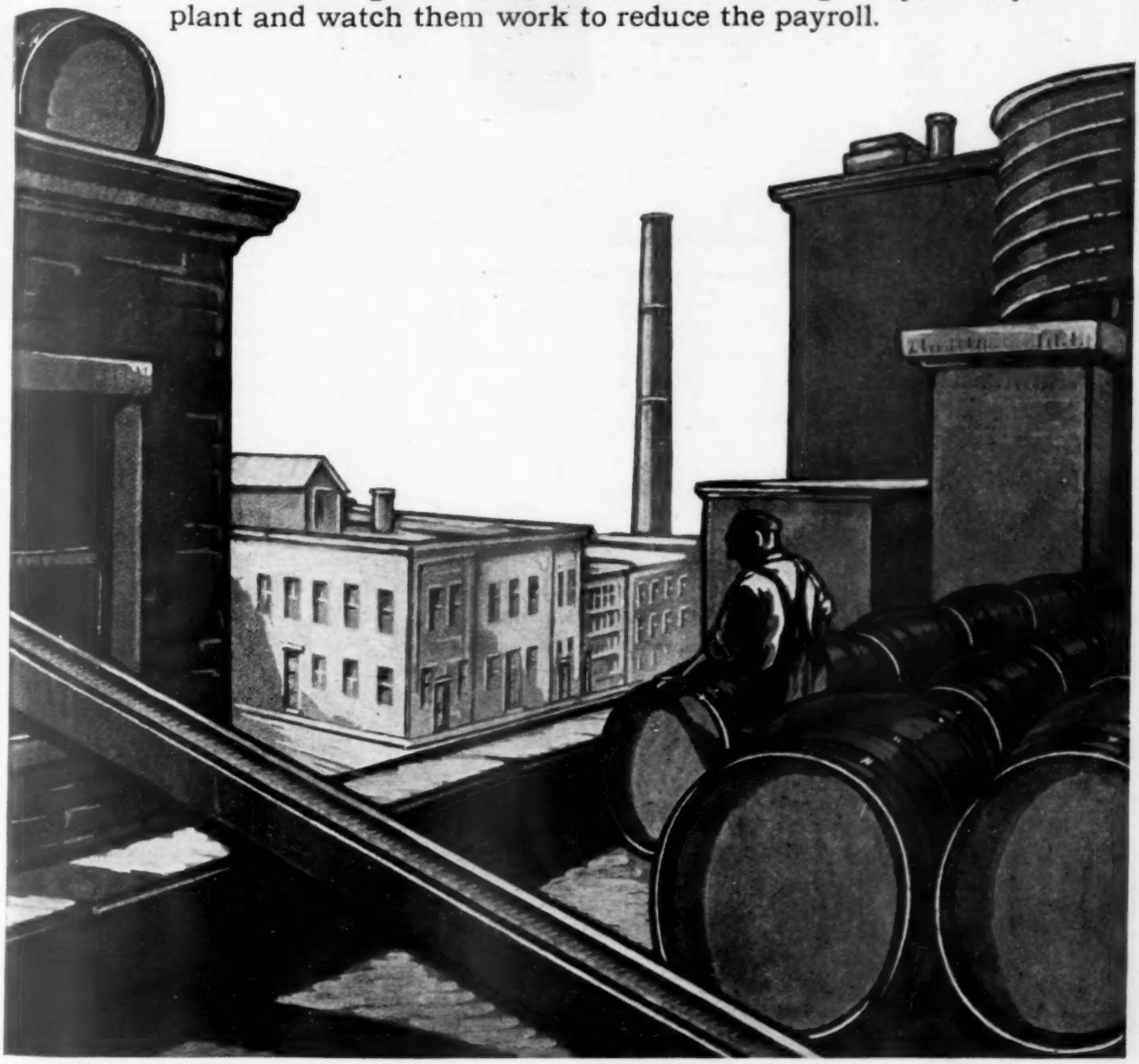

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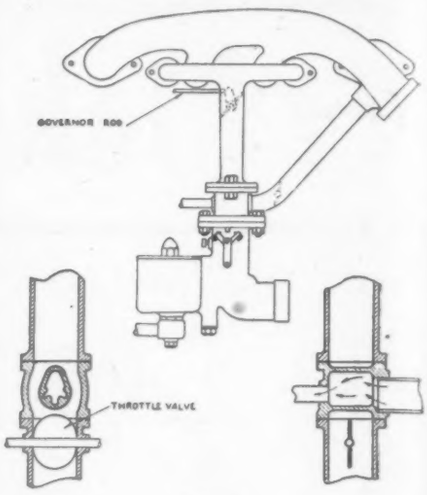

Fig. 5

for heat at (A). The hot surface can therefore be concentrated at these points with the least area for all conditions.

The upper portion of Fig. 5 illustrates an application of exhaust to engines where a long vertical intake pipe separates the carbureter from the branch. The two views in the lower portion show sections of this vaporizing device.

When an intake is jacketed separate from the exhaust, as in Fig. 2, it is necessary to see that the jacketed portion is not a dead end but forms a passage for the exhaust. This is accomplished by providing an outlet (P) which need not exceed ¾-inch in diameter if noise is a controlling factor. It is possible to locate this exit so as to localize the heat in certain spots. It may be found very effective also to drill two holes (F) as shown in Fig. 1, to the atmosphere at points opposite (B), so that the exhaust will flow to these points and thus improve the performance when idling. When this is done care should be taken to avoid danger from fire should hot particles of carbon discharged at this point ignite any gasoline outside the carbureter or manifold.

A milder heat application is obtained by heavy sections of metal adjacent to the jacketed section as at S, Figs. 1 and 2. They should be avoided because their temperature is lower than directly heated surfaces, but they can be used to advantage only when it is impossible to bring the exhaust gas to the desired spot. They may frequently be used to conduct heat to the carbureter flange, where it is needed because of the spray thrown off from the butterfly-valve at low-throttle opening.

Having described the design and arrangement of heated surfaces and passages for producing an approximate fog mixture, we deal next with the temperatures of the exhaust available as a source of heat and the temperatures of the mixtures which give the best results.

Surface Area for Proper Mixture

In practice the area of the exhaust-heated surface exposed to the mixture varies from 1 square inch for each 15 cubic inches of displacement to 1 square inch for each 30 cubic inches displacement of the engine, this estimate of area including the metal which lies sufficiently close to the heated surface to

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become hot. Flanges in the exhaust stream should be designed so as to present the maximum surface to the exhaust gases without retarding the velocity of these gases. Exhaust passages should be constructed so as to maintain the highest velocity over the heat collecting fins and yet not impose detrimental back-pressures.

When the exhaust gases just leaving the port impinge upon the heated surface the least area per cubic inch displacement is required. When the exhaust is 12 inches or more from the hot surface, the larger area is required. The quantity of the exhaust gases in such a case must not be less than that conducted by a pipe having the same sectional area as the intake passage. The heat in the exhaust available for vaporization is dissipated so rapidly when the exhaust is carried over the cylinder to a manifold on the opposite side that there is usually too low a temperature and insufficient heat for vaporization with this design, even when the entire exhaust is then utilized.

The back-pressure due to the use of mufflers may have an important effect upon the heat available in some of the designs shown. So much back-pressure is developed at high speed with some mufflers that careful control must be exercised over the flow of exhaust past the heated spots under these conditions. Muffler back-pressure does not greatly affect the temperature of the exhaust, but it will cause a larger volume of exhaust gas to flow thru exhaust jackets and the vents therefrom and thus cause considerable increase in mixture temperatures.

The amount of heat necessary for good operation depends somewhat upon the carbureter.

If the carbureter is of a straight uniform mixture type and set for economical operation, considerably more heat will be required for flexibility than if the carbureter contains a provision for a temporarily rich mixture on acceleration. Richer mixtures are more satisfactory than normal mixtures even in the heated-surface manifold while the engine is warming up, and particularly at low speed with wide open throttle.

Service Conditions to Be Satisfied

The widespread use of cars and trucks has developed a broad range of conditions under which the engine must operate. The following are among the conditions which must be met by manual adjustment of temperatures of the mixture by regulating the exhaust flow to the heated surface, or otherwise:

(1) The temperature under the hood may vary from 0 degrees F. in winter to 150 degrees F. in summer.

(2) The variation between day and night temperatures.

(3) The wide variation in temperature due to latitude.

(4) Variations due to altitude and barometric changes.

Most of the above conditions can be successfully met so far as adequate heat is concerned by using care in the design of the manifolds so as to admit adequate exhaust to the heated surface, for sea level and coldest service, and by providing valves so well made as to cut off part or all of the exhaust to the heated surface for altitude and hot-weather service. This latter condition is particularly necessary when a high

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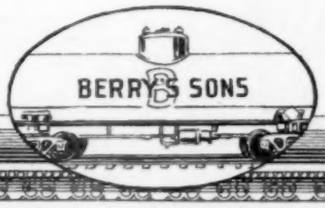

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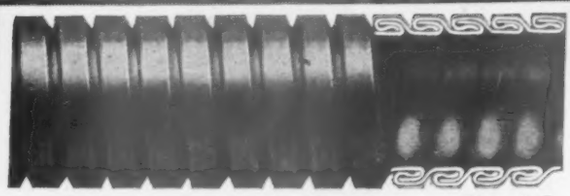

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back-pressure is developed by the muffler. In one case on record a temperature of over 600 degrees F. was observed at the hot surface in spite of the fact that the exhaust throttle was only cracked.

Valves may be used in three locations to regulate exhaust flow, as follows:

(1) A valve to close the main exhaust passage partially or fully and thus force the exhaust over the heated surfaces. This is used when all of the exhaust is at times needed at the heated surface and usually in cases in which the exhaust must be conducted long distances.

(2) A valve between the exhaust header and the exhaust jacket surrounding the heated surface, as at V-1 in Fig. 2. This is a most practical arrangement.

(3) A valve such as V-2 in Fig. 2, regulating the exhaust to the atmosphere after the hot gas has passed thru the exhaust chamber. This may be considered a refinement and is seldom used.

Fundamental Considerations Affecting Economy

While this report has to do with the preparation by vaporization of the explosive mixtures for the purpose of effecting a satisfactory and economical service from our present fuels, the engineer must keep in mind the other fundamental considerations affecting economy. Below attention is briefly called to these factors with suggestion that they be constantly consulted and their importance never overshadowed by any non-essential treatment.

The air standard efficiency established by the Gaseous Explosion Committee of the Royal Society as the most fundamental method of comparing results and expected performances from internal-combustion engines, points out the importance of compression ratios as the method thru which we may expect high power and economy from a given engine.

It is therefore important that the engineer shall keep in mind those things which limit the compression ratio in designing the engine or tend to reduce the actual compression in service. Among these considerations the following are important:

With present fuels compression is governed by such fuel characteristics as tend to allow such a rapidity in flame propagation as to produce the phenomena known as "ping pinking," knock or detonation. This limits the compression ratio by making the engine appear rough and thus both power and economy are limited.

The mixture temperature at which an engine will knock due to detonation depends primarily on the fuel. Generally speaking, fuels with contents having boiling points over 350 degrees F. are susceptible to detonation with compressions running over 70-pound pressure.

Engines have the strongest tendency to detonation when volumetric efficiency is highest, i. e., at the slower speeds. This fact determines the compression permissible in any design. If an engine is susceptible to carbon deposit due to over-lubrication, it will take very little heating of the mixture to cause knocking. In the case of engines designed so as to have low turbulence of the charge and poorly designed water-jacketing and cooling of the piston or other parts of the combustion chamber, the tendency to de-

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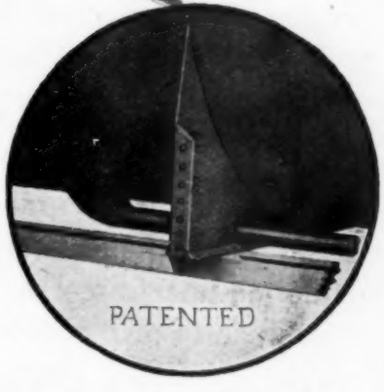

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tonate limits the allowable temperature of the mixture.

The design of the engine can reduce detonation to minimum in a given fuel by proper attention to these details:

(1) Turbulence which is promoted by the proper gas velocity past the intake valves.

(2) Keeping all parts of the combustion chamber from exceeding certain maximum temperatures.

(3) Location of the spark plug.

(4) Shape of combustion chamber.

(5) Preventing the crest of the original explosion wave from impinging on a flat surface which itself can echo back to another flat parallel surface.

(6) The distance of the spark plug from the nearest opposite surface.

Such elements of design as tend to maintain actual compression in service such as:

(1) Good piston and ring design.

(2) Proper lubrication of cylinder, piston and ring surfaces.

(3) Prevention of the warping of the valves due to uneven heating and rotation.

(4) Prevention of the warping of the cylinders due to casting design and proper water distribution.

It has been demonstrated that little power is available from a quiescent mixture. It is absolutely necessary for economy and power that the mixture be as turbulent as possible to promote flame propagation. This is effected primarily by the velocity of mixture past the intake valve which should be between 130 and 165 feet per second. Turbulence is improved by certain shapes of combustion chamber, generally such shapes as are simple in contour and with few projections to dampen out the turbulence.

Results

When new designs of manifolds constructed according to the foregoing recommendations have been applied to engines, it will be possible to readjust the carbureter so as to give a leaner mixture with a consequent saving in fuel as well as a more satisfactory general operation.

Results to be attained by following the foregoing methods of vaporization are:

(1) A better combustion with consequent decrease in fuel consumption.

(2) A decrease in crankcase dilution by limiting the passage of unburned fuel past the pistons.

(3) Reduction of carbon deposit.

(4) Maintenance of the engine in such a condition as to deliver higher power over longer periods between overhauls.

(5) Improvement of the general performance of the engine as to sweet running and ability to accelerate smoothly and rapidly.

The committee notes a strong tendency at present toward making high volumetric efficiency secondary in importance to securing the best average performance with respect to power, economy, low maintenance cost and long service between cleaning the combustion chamber and spark plugs. The most rational design is that which favors a high torque and economy at speeds and loads usually found in service rather than a sacrifice of average performance for some special result desired only by a few or seldom demanded by the average user.

PRODUCTION SECTION

Fort Worth Bureau
518 Texas State Bank Building
Ward K. Halbert, Manager

Tulsa Bureau
408 Cosden Building
J. B. Gambrell, Jr., Manager

Houston Bureau
303 Lumberman's Bank Building
Paul Wagner, Manager

Possibilities Of Deeper Drilling Interesting Oklahoma Producers

WHILE OPERATORS in Oklahoma are well satisfied with the performance of the newer fields such as Hewitt, Jennings (on the border line of Creek and Pawnee counties), and the new Duncan pool of Stephens county, they are giving more and more thought to the possibilities of deeper drilling.

The past week has shown that the Burgess sand pool in the old Cleveland district may assume rather large proportions. Production from this horizon is showing a wonderful stamina and consistency, and operators are becoming convinced that practically the whole state can be drilled over profitably. Some of them being of the opinion that probably production will be increased fully 50 per cent by deeper drilling.

Kansas Pools of Small Area

Kansas operators, from time to time, are opening up new pools in this state, but the history of these pools shows that they are, on the whole, of small area and tho profitable to a few individual companies, add but little to the gross production of the state.

Oklahoma continues to show an increase in production from week to week. Figures for the past week show that this state is now producing 288,000 barrels daily, credited to the following fields: Cushing, 35,000 barrels; Healdton, 31,000 barrels; Hewitt, 23,000 barrels; other fields, 199,000 barrels.

Kansas, whose older fields have been registering a gradual decline, has taken a new lease on life and shows an increase of slightly over 3,000 barrels for the past week, and is now producing 95,800 barrels daily, divided among the following fields: Eldorado, Peabody-Elbing, 68,000 barrels; Augusta, 10,600 barrels; other fields, 17,200 barrels.

Big Beggs Well Boosts Total

The increase in Oklahoma is largely attributable to the big well completed in the Beggs district, and the large run of ordinary completions in Hewitt, Osage and the new Duncan field of Stephens county. The Covert-Sellers pool and the Peabody-Elbing are responsible for the boosting of Kansas production to a level it has not attained in many weeks.

North Louisiana Operations on Increase

During the trade week, North Louisiana came in with 29 completions, which included 7 failures and one gasser, the 21 successful completions adding new production of 8,863 barrels. The Homer pool led with 14 producers, good initially for 7,108 barrels. The only extension of territory was at Bull Bayou where a 500-barrel well defined the producing area one-half mile to the northwest.

North Texas failed to record any important developments, chief among the completions being two 1,500-barrel wells in defined territory near the town of Breckenridge in the region which has for the past several months borne the burden of keeping the deep lime area of Texas in the limelight.

Late Field News

Staff Special

HOUSTON, July 5.—Floods in the lower country of Mexico have made roads impassable over the last two weeks, material has been swept away and construction work stopped, particularly in the Tepetate-Los Naranjos territory, where nearly all the oil field bridges are out. Nothing can be moved into this country except by railroad and on mule-back. Six bridges are reported to have been ashed out between Panuco and Tempoal, so that it is apparent the floods have affected to a greater or lesser extent all territory around Tampico.

FORT WORTH, July 3.—John Markham's No. 1, Mrs. A. Z. Vowell, in Eastland county, came in July 1 for initial production of 700 barrels. Location is mile and a half from Stephens county line. Tidal Oil Company is said to be interested with Markham in the well.

TULSA, July 6.—The Best Of All Oil Company's test in Sec. 24-15-9W in the Walters field broke loose while bailing 1,200 feet of mud in the hole, blew bailer out of the hole thru the crown block, and blew down the rig. It is running wild. Casing had been set but not anchored, so cannot close the gate valve. It is probably making 30,000,000 feet of gas.

In the Beggs district, the Producers & Refiners Corporation's No. 4 Pink Hawkins, in Sec. 11-14-11, is making 1,200 barrels, and the same company's No. 1 Willie King in the same section is showing for a large well 15 feet in the Wilcox sand found at 2,800 feet.

Waite Phillips In On Purchase Of Refinery

TULSA, July 2.—Waite Phillips, Independent Mid-Continent producer, and the Highway Oil Refining Company have formed the Phillips-Highway Refining Company and purchased the old 2,000-barrel plant of the Okmulgee Producing & Refining Corporation in Okmulgee county. The purchase price was $530,000, which included the tank cars and pipe line owned by the Okmulgee Producing & Refining Corporation.

The refinery will be put into immediate operation and will run on the Wilcox sand production owned by Phillips

in the Phillipsville pool. This crude is of an exceptionally high quality, testing 46 gravity, and the new company will cut a high-grade straight-run gasoline and also a naptha to blend with the 14,000 gallons of casinghead now being manufactured by the Highway Oil Refining Company.

The straight-run gasoline and casinghead blend will be marketed thru the Lee-Cordell-Sloan Oil Distributing Company of Oklahoma City (a subsidiary of the Highway Oil Refining Company), which operates four service stations in Oklahoma City and has several wholesale distributing points.

Officers of the Phillips-Highway Refining Company are: Waite Phillips, president; W. E. Burk, vice president, and general manager; R. B. Pringle, secretary and treasurer; and J. R. Parks, assistant secretary and treasurer.

500-Barrel Allen County Well
Kentucky's Best New Producer

By Special Correspondent

LEXINGTON, KY., July 5.—Allen county comes to the front with another 500-barrel well, drilled on the C. H. Bailey lease. O. P. Whittle, of Bowling Green, and his Cincinnati associates own the well. The depth of the hole is 325 feet. The rig caught fire from a big flow of gas which accompanied the rush of oil and was extinguished with difficulty.

The Imperial Oil & Gas Company, owned by Ralph Safford and others of Paintsville, Ky., has a well on the Galen Lemaster lease, Johnson county, showing for oil at thirty inches in the sand. It will be drilled in this week.

The well on the I. G. Rice lease, Johnson county, was shot by the Virginia-Kentucky Oil & Gas Company, its owners, and reports call it the best well yet found in the Berea sand. Some estimates place the well at 25 barrels, but the official test has not been made.

The Emden Oil Company, with large holdings on Barnett creek, Johnson county, is moving a rig to its location on the H. M. Rice farm, and expects to spud in within a few days.

The Southern Oil Company, operating on the H. M. Plummer lease, Lee county, report No. 2, credited with 70 barrels. The Clark Petroleum Company's No. 9, A. B. Hoskins tract, same county, is also rated at 70 barrels.

I. J. Engle now has five rigs operating in Lee and Estill counties, and expects to bring in a well in Lee county this week. Engle says his rigs are operating day and night and he finds drilling in the eastern Kentucky field much easier than in Texas, Oklahoma or even in western Kentucky, because of the easy penetration of the ground, rock and sand.

The Leon Oil Producers' Company had a good showing of gas at 425 feet on the Sam Bolcher tract.

Simpson county now has 58 completed wells, making from 5 to 100 barrels. Thirty-one drilling machines are working, there are 11 dry holes and two gassers. Business men of Franklin, county seat of Simpson, have built a three-inch pipe line nine miles to the Stringer pool, and a two-inch line to the Wheat pool, six miles further in Allen county, to carry the Simpson production.

George Vardon reports No. 1, Wilson lease, Warren county, steadily pumping and has not pumped off. This well has filled three tanks of 300-barrel capacity each; it showed some salt water at first but that has been exhausted. No. 2 is drilling. Vardon has 15 producing wells in western Kentucky.

The Leon Oil Company completed a well on the Nellie Burch lease, Warren county, at 525 feet, with 25 feet of sand. The well was shot and will make 50 barrels. No. 2 will begin spudding immediately.

The Maverick Oil Company's No. 4, Crewe lease, Warren county, is in at 490 feet, 16 feet under shale. Oil was struck in the first pay, and the strike is good for 20 barrels.

Kissler well No. 1, Warren county, is in at 1,028 feet and shot. There was 28 feet of pay. After being shot the well filled with oil nearly to the top. The well is rated at a 50-barreler.

The Mississippi Oil Company shot the well on the Nell Dodson lease, Simpson county, and it is showing for 20 barrels.

The Alabama-Kentucky Oil Company brought in No. 1, Holloway lease, Allen county, southwest of the Stringer wells, and it is rated at 25 barrels. No. 2 is drilling.

The Fountain Run Oil Company has a 30-barreler on its lease in West Monroe county. It was struck at 397 feet.

The Big Jack Oil Company's well No. 1, R. L. Morris lease, Warren county, just connected with the tank, gives indications of being a big producer. While no official estimate has been given, it pumped 100 barrels daily from the time it was connected with the tank. A pipe line will be run to the well during the next few weeks. Well No. 7, owned by the Big Jack Oil Company, on the Davenport lease, Warren county, has been shot and is making a good showing.

Tom Wright, drilling in Warren county, reports No. 1, Bunch lease, Hardcastle pool, completed at 625 feet in 15 feet of rich pay. It will make a good pumper. Wright is moving the rig to the second location. He has also brought in No. 1, Bostick lease, north of the Bunch lease, at 642 feet.

Campbell & Worley report Nos. 1 and 2, Mrs. Sledge .40-acre lease, Warren county, offset to the George Sledge wells, making two 250-barrel tanks a week. These wells were completed at 175 feet and above the shale. The wells, while very shallow, showed up so strongly it was decided to test out the sand. The wells have now been pumping over a month and are as strong today as when pumping started.

A big lease sale has been closed at Bowling Green, Warren county. Watkins & James sold 42 acres of the Joe Perkins lease, Davenport pool, to Harry Kerstetter, at a reported consideration of $1,000 per acre. No. 1 well on this lease, and which is not included in the sale, was brought in at 1,005 feet and is showing well.

A well abandoned as a dry hole on the S. H. Martin farm, Warren county, a year and a half ago, has been reopened, found to contain a considerable amount of oil, was put to pump and is making a good showing. Well No. 1 of the Helm Oil Company, J. L. Jenkins lease, Warren county, was shot and put to pump, making 10 barrels an hour. The well is 480 feet deep, the oil is of a high-grade amber.

Holder & Parker have completed No. 3, Brown lease, Allen county, at 276 feet. It is equal to No. 2, which filled two 250-barrel tanks in 48 hours and is pumping 100 barrels now. A. F. Dew reports No. 1, George Willoughby lease, Allen county, in at 490 feet, pumping 50 barrels. William Rock reports No. 3, Bob Burgen lease, Allen county, at 280 feet, with 12 feet of pay. The well filled to the top and will flow when tubed. Rock estimates it at 50 barrels.

J. Wilder, manager for the Cadillac Oil & Gas Company, completed a good well in Allen county, four miles northeast of Scottsville, at 426 feet, with 13 feet of pay. 100 feet of oil is now standing in the hole.

George Morrison reports No. 6, Willoughby Heirs lease, Allen county, at 435 feet, 13 feet under shale. The well filled nearly to the top with oil.

The White Plains Oil Company's No. 1, J. C. Buchanan lease, Warren county, is making 30 barrels a day. The company is drilling No. 1, Lewis Williams lease, near Scottsville; near the Mitchell pool, and No. 2, S. S. Kemp lease, east of the Sledge wells.

Well No. 19, W. I. Nicholls lease, Gainesville pool, Allen county, is in at 400 feet, and is reported pumping 40 barrels.

Well No. 1, Harry Williams lease, west of the Costello pool, Warren county, is reported at 20 barrels. Its owner is not stated.

Oliver Dixon, Harris & Weist completed No. 2, W. A. Duke lease, east of the Foster lease, Sarver pool, eight miles south of Scottsville, Allen county; capacity not stated. No. 3 will drill in this week; No. 1 was good for 60 barrels.

Fred B. Hillis and others have brought in No. 3, Francis Bowling heirs' tract, Menifee county, good for 25 barrels. On the H. F. Osborne farm, same county, the Ohio Oil Company has three new wells, Nos. 7, 8 and 9, which are rated at 15 barrels each.

No. 2 well of the Mason Oil Company, Miracle lease, Lincoln county, is making 10 barrels.

Drilling on the Darius Conley farm, Magoffin county, John G. White struck a good flow of gas. Nos. 1 and 2, recently drilled on the Conley tract, are also gassers.

A 75-barrel well is reported on the upper Warrick Bailey tract, Johnson county, by Jewell & Brown.

The well of the Flesher Petroleum Company, Puncheon creek, Magoffin county, is down 2,000 feet with a small showing of oil and gas.

The Ohio Fuel Company's well on G. J. Carter and E. E. Shannon lease, Lawrence county, is a 4-barreler.

Well No. 3, Brack Howard lease, Morgan county, is in with a production of 150 barrels. The well is owned by the Kenton-Morgan Oil Company.

No. 1 well on the Cas Bailey farm, five miles south of Bowling Green, when the bit reached 335 feet, struck a strong flow of oil and some gas, setting fire to the rig and burning all the afternoon. It was finally extinguished and then the well caught fire. The blaze was spectacular and brought thousands of sight-seers. The fire was finally quenched, however, and the well connected with a tank. The first 250-barrel tank was filled in 5 hours and 45 minutes. The second 250-barrel tank was filled at the rate of 57 barrels per hour. The third 250-barrel tank is nearly filled.

Operators Contend 4,800 Acre Limitation In Osage Should Be Abrogated

By J. B. Gambrell, Jr.

FOLLOWING the abrogation of the 4,800-acre limitation as applied to lands of the Five Civilized Tribes, operators in the Mid-Continent field, thru the Mid-Continent Oil & Gas Association, continued that lands of the Osage tribe should have been included in the lifting of limitation. In the accompanying article, Mr. Gambrell, manager of **National Petroleum News** Tulsa bureau, advances the argument that the 4,800-acre rule has not made for rapid development of Osage lands, and shows by the statement of ownership of Osage leases that the primary reason for the rule, that of preventing larger interests from getting control of all the land, is not at this time a factor in the situation. Also, the story is the first comprehensive public statement of ownership and production of Osage oil lands. —Editor.

TULSA, July 5.

MID-CONTINENT operators and companies are rather at a loss to understand why the Osage reservation was not included in the order issued by the Interior Department revoking the 4,800-acre rule. They are, of course,, pleased that the restriction as it relates to the Five Civilized Tribes has been abrogated, but the principal reason for the hearing set for July 15 at Washington was to petition the department to lift the restriction, particularly on Osage lands.

The Mid-Continent Oil & Gas Association has received a telegram from John Barton Payne, secretary of the interior, advising that only lands of the Five Civilized Tribes is affected and that the matter of the Osage Reservation is still under consideration. The secretary further states that the hearing set for July 15 has been postponed, as he is leaving for Alaska on July 8. No intimation is given of whether the Osage restriction will be decided upon before his Alaskan trip or will be held in abeyance pending his return some time in the fall.

However, many of the better informed oil men believe that the revocation of the restriction on the lands of the Five Civilized Tribes indicates that the department has come to realize at last that this restriction is no longer necessary and should be abolished. Therefore, they expect to see the restriction as it relates to the Osage lifted without the formality of a hearing. Nevertheless, the Mid-Continent Oil & Gas Association will continue to gather data and statistics to present to the Interior Department whenever the opportunity is afforded.

Favors Abrogation of Rule

The association, in a letter to its members on June 25, 1920, goes on record as favoring the immediate abrogation of the 4,800-acre rule. The official statement of the association is as follows:

"The departmental rule limiting holdings of oil leases on restricted Indian land to 4,800 acres for each operator has, in the opinion of the great majority interested in the industry, passed the period of its usefulness. It is now largely a source of vexation and confusion and is a business retardant. Originally designed to prevent a monopoly of oil holdings in Indian lands, it has ceased to be necessary because the percentage of restricted land is on the decrease. Also the history of the development in Oklahoma and elsewhere shows that the larger companies have been unable to establish a monopoly where there were no restrictions and no 4,800-acre rule. It is believed that the principal effect of the 4,800-acre rule is to limit and in some instances destroy a market which the small producer would otherwise have for the sale of his holdings to the larger or better equipped companies. To this extent the rule is a discrimination and an injustice against the so-called small operator whose properties consist of departmental leases. Many government officials are convinced that the rule no longer benefits the Indian and will therefore urge its repeal."

As to whether the rule is proving an injustice to the so-called small operator is, of course, a matter of opinion, but a survey of the situation undoubtedly reveals that the conditions which brought about its conception no longer exist. Promulgated by Secretary Hitchcock, its avowed purpose was first to prevent monopoly and second to have more companies operating in producing oil, thereby hastening the development of the territory.

One needs but to cite a paragraph from the report of the Federal Trade Commission to congress on the advance in prices of petroleum products to thoroly explode the monopoly theory, say operators. The commission has the following to say in this connection:

"The Standard Oil companies, alone, taking only those who are generally recognized as such, had a total production of 69,529,000 barrels in 1919, or about 18 per cent of the total marketed production of the United States. Excluding the California field, their production for the fields east of California amounted to about 16 per cent of the total marketed production from those fields."

Fails to Hasten Development

Considering the secondary motive actuating the promulgation of the 4,800-acre rule, it was expected to hasten the development of probable oil territory. This, it is generally believed, it has signally failed to do, in spite of the fact that at the present time the trust period expires in 1931 (unless extended some time in the future).

That the restriction ultimately will be lifted on Osage Indian lands is the consensus of opinion of better informed oil men of the Mid-Continent. If this is true, was there ever a more propitious time than the present? A reference to the following table shows that the Osage reservation produced 14,453,925 barrels during the year 1919, or roughly 40,000 barrels daily. Today it is producing more than 45,000 barrels every 24 hours, with only one-third of its acreage leased for oil development.

Gross Production of Osage Reservation, by Months, for the Year of 1919

Month	Amount Oil Produced
January	1,040,225 barrels
February	932,628 barrels
March	1,102,257 barrels
April	1,582,607 barrels
May	1,212,854 barrels
June	1,207,502 barrels
July	1,281,224 barrels
August	1,321,513 barrels
September	1,356,186 barrels
October	1,370,650 barrels
November	1,272,876 barrels
December	1,273,373 barrels
Total	14,453,925 barrels

The Osage reservation consists of approximately 1,400,000 acres. Of this amount, 413,846.10 acres are under lease by oil operators, leaving 986,153.90 acres yet to be offered for oil development. At the present time there is not any territory in the Mid-Continent field (Oklahoma, Kansas, Texas and Louisiana) of like area that can compare with the Osage reservation in petroleum potentiality.

The great Burkburnett field of north Texas, which was heralded as the greatest field ever discovered in the history of the industry (and was played by fake promoters all over the world), is making 75,720 barrels daily (pipe line runs

of June 17). Its producing area has been clearly defined and may be considered now as an "old field."

The rapid depletion of wells in the general Ranger territory (black lime producing area) of north Texas is a matter of record and further operations in this territory are almost prohibitive, due to high drilling costs and small-calibred producers.

With the exception of Oklahoma, the only territory in the Mid-Continent field that was expected to furnish an increase in crude production after the disappointment of the north Texas fields was the Homer field of Louisiana. This field was opened by a 30,000-barrel well, but is now producing roundly 80,000 barrels daily, only 11 per cent of which is coming from the 2,100-foot horizon, due to the fact that this level is being drowned out by water. Wildcatting in the Louisiana territory has already reached hopeless levels and legitimate operators frankly admit that the wildcatting campaign is a failure.

Must Encourage Operators

With the above in mind, it becomes more and more evident that if the Mid-Continent field is to be expected to increase its production in an effort to keep pace with consumption, every restriction or obstacle must be removed from companies and individuals operating in this field.

Table No. 2 shows the names of oil lessees in the Osage reservation, together with acreage and gross production for month of February, 1920. A study of this table shows that 226 companies or interests are producing 1,169,772.36 barrels. The following pipe lines are operating as purchasing agents in the Osage reservation: Prairie Pipe Line Company, Cosden Pipe Line Company, Sinclair-Gulf Pipe Line Company, Marland Refining Company, National Refining Company, Gulf Pipe Line Company, Empire Refining Company, Hill Pipe Line Company, Dunn Petroleum Company, Southern Oil Corporation, Mid-Co Petroleum Company, Oklahoma Pipe Line Company (Carter), Bigheart Producing & Refining Company, and The Texas Company.

Since February there are a number of other companies now producing oil in the Osage who purchased acreage at the February 3 or May 18 sale. Table No. 2 shows only actual pipe line runs for the month of February.

It must be remembered in this connection that while February shows only 1,169,772.36 barrels, it is a short month and not representative of Osage production during 1920. Since that time the Gypsy Oil Company has opened up a Burgess sand pool in the old Cleveland district with a 7,000-barrel initial well and now has more than 10,000 barrels of production from three wells in this pool. Also, in Sec. 36-27-5 western Osage, Marland Refining Company has opened up a pool 20 miles from production and the well is still making 1,100 barrels. In April, a shallow sand pool was opened up by the Wrightsman Oil Company in Sec. 19-23-9. Production coming from a 480-foot level and wells are showing an average initial production of 75 barrels. In addition to these pools, most of the older fields have extended their producing area materially.

Think Wilcox Sand Untouched

Tho production from the first break in the Mississippi lime is believed by many geologists to be the Wilcox sand, practical operators who have had years of experience in the Mid-Continent field contend that the Wilcox sand is yet to be penetrated. Should this prove the case, the Osage will have to be redrilled somewhat similar to the campaign that is now under way in Okmulgee and contiguous counties. Wilcox sand pools are being found now in the greater Okmulgee district, in territory previously considered condemned.

Oklahoma has shown a remarkable increase in production during the past month, but still production fails on a whole to increase in the same ratio as consumption, and it must be remembered that while Oklahoma has increased its production, Kansas, Texas and Louisiana have been hard put to maintain the production levels of January 1. The government is urging that a maximum production be attained. It would appear that one of the most practical things the government can do in assisting in developing this production is to extend the trust period and abolish the 4,800-acre rule, the Mid-Continent Oil & Gas Association says.

ENTITIES FORMED PRIOR TO SEPTEMBER 15, 1917

Schedule Showing Names of Oil Lessees of Land in Osage Reservation, Oklahoma, for Oil Mining Purposes, Together With Acreage Up to and Including April 30, 1920, and Gross Production for February, 1920.

Lessee	Total Acreage	Gross Production
Ashland Oil Co., Devonian Oil Co., Echo Oil Co., Leonard Drilling Co.	160	2,345.82
Barnsdall Oil Co. and Neenah Oil Co.	1,200	1,652.37
Barnsdall Oil Co., Devonian Oil Co., and Leonard Drilling Co.	160	62.50
Barnsdall Oil Co., Echo Oil Co., Devonian Oil Co., Leonard Drilling Co.	640	3,551.92
Barnsdall Oil Co. and Osage Development Co	4,480	25,002.67
Barnsdall Oil Co. and J. M. Sonne	3,648.61	6,195.78
Echo, Devonian and Leonard Drilling	800	1,183.75
Barnsdall Oil Co., and J. J. Larkin	960	565.51
Echo Oil Co., Devonian, Whittier, and Leonard Drilling Co.	800	611.04
Finance Oil and Franchot	1,600	716.52
Finance Oil and Livingston Oil Co.	640	203.20
Fifty-Nine Osage Oil and H. V. Foster	3,098.83	10,658.26
Forty-Five Oil Co. and E. S. Bell	1,014.58	1,072.15
Foster & Leech	640	251.57
Foster, H. V., and Norwood Oil Co.	3,040	19,261.01
Foster & Davis, Inc.	2,800	4,058.89
Midland Oil Co. and De Gollier	2,202.83	3,520.00
Paragon Oil Co. and SW Oil Co.	320	395.32
Paragon Oil and J. A. Steel	640	175.20
Phillips Pet. Co and John Burkett	720	15,371.89
Phillips Pet. Co. and J. J. Shea	249.8	4,874.03
Prairie Oil & Gas Co. and Elmer Oil Company	4,053	4,744
Prairie Oil & Gas Co. and A. W. Schulthis	1,920	523.53
Sagamore Oil & Gas Co. and Wolverine Oil Co.	1,179.15	3,051.68
Steyner Oil Co. and Mechanics Bank	5,013	9,692.59
Summitt Oil Co. and Sand Forks Gas Co.	480	448.03
E. N. Wood—N. M. McIntyre and Geo. Kinney	320	341.47
	42,779.80	120,530.70

Schedule showing names of oil lessees of land in Osage reservation, Oklahoma, for oil mining purposes, with exception of entities formed prior to September 15, 1917, together with acreage up to and including April 30, 1920, and gross production for February, 1920.

Acacia Oil & Gas Co.	1,120	316.12
Almeda Oil Co.	2,168.76	2,153.80
Alexander, Jno. H., et al	160	31,931.14
Avery, Cyrus S., et al	320	2,766.89
Arbon, B. J.	1,074	1,392.00
Ashland Oil Co.	2,236.29	2,502.05
Atlantic Oil Prod. Co.	2,240	3,652.38
Barnsdall Oil Co.	9,188.77	86,831.00
Barnsdall Oil Co. and Leahy Oil Co.	640	351.41
Bell Oil & Gas Co.	1,899	254.55
Breene, Frank M., Foster & McKinney	480	117.99
Bigheart Prod. & Refining Co.	3,040	4,583.67
Braden, C. T., and Clint Moore	714.55	21,596.40
Boston Osage Oil Co.	4,698.63	1,388.45
Brenner Oil Co.	1,567	571.96
Burket, John G.	560	1,296.72
Canary Stillwell Oil Co.	160	147.
Carter Oil Co.	8,000	26,878.80
Carter Oil Co. and Wm. M. Graham	160	6,168.70
Carter Oil Co. and Southwest Pet. Co.	320	4,316.54
Central Pet. Co.	160	1,622.96
Clover Oil Co.	1,760	7,236.84
Cosden Oil & Gas Co.	3,200	1,473.90
Celestine Oil Co.	640	11,489.22
Crescent Oil Co.	640	482.10
Dallas Osage Oil Co.	3,200	12,964.07
Deep Pool Oil Co.	320	2,424.19
Deep Pool Oil Co. and C. F. Stuart	160	156.52
Duffield, L. C., and P. G. McGee	640	367.76
Depositors Oil & Gas Co.	480	191.04
Devonian Oil Co., A. W. Leonard Drilling Co. and Echo Oil Co.	160	5,905.36
Devonian Oil Co., A. W. Leonard Drilling Co. and W. C. Elliott	960	1,214.41
Durham, E. A.	160	590.09

Lessee	Total Acreage	Gross Production
Enterprise Transit Co.	1,760	333.74
Evidence Oil Co.	2,720	221.96
Finance Oil Co.	2,080	6,168.63
Finance Oil Co. and Foster & Davis	640	1,120.68
Finance Oil Co. and Chas. B. Peters.	1,440	4,406.24
Fifty-Nine Osage Oil Co.	2,298	9,288.60
Fitzgerald, John W.	160	67.95
Foster, H. V.	3,360	15,025.72
Foster, H. V., Winona Oil Co. and Potter Oil Co.	160	9,364.82
Foster, H. V., and Foster & Davis, Inc.	640	1,067.58
Flesher Pet. Co. and Old Dominion Oil Co.	1,760	8,507.74
Garnet Oil & Gas Co.	2,560	760.63
Gillespie, F. A.	480	3,496.35
Gillespie, F. A., and Guy T. Berry	160	738.07
Gillespie, F. A., and C. W. Grimes	1,120	7,150.13
Gardner, Spencer & A. T. Burk	480	178.36
Gillespie, L. A., A. W. Lucas and H. J. Steinberger	160	1,682.08
Guffey Gillespie Oil Co.	6,280	53,713.50
Gypsy Oil Co.	5,325.29	47,082.60
Gilliland Oil Co.	1,863	2,349.42
Gypsy Oil Co and McMan Oil & Gas	960	2,124.35
Gypsy Oil Co., McMan Oil & Gas Co., Phillips Pet. Co. and J. J. McGraw	473	11,957.52
Gypsy Oil Co. and Phillips Pet. Co.	640	5,854.13
Gypsy Oil Co., E. P. Harwell, J. J. McGraw and Phillips Pet. Co.	480	12,033.04
Hadley, John R.	640	527.86
Hazelett, Robert A.	800	460.00
Henry Oil Co., Chicago Oil Co., and Illinois Oil Co.	320	2,915.77
Homaokla Oil Co.	160	3,222.32
Howard, Oscar H., Carl E. Duffield and F. B. Berlin	702	2,909.44
Hill, J. B.	480	572.74
Ideal Royalty Co.	160	781.84
Imperial Osage Dev. Co.	4,692.12	7,192.75
Indian Territory Ill. Oil Co.	4,800	27,189.89
Interstate Oil & Gas Co.	1,006.72	819.96
Interstate Oil Co., Mason & Overlees	82.48	703.86
Inland Oil Co., C. W. Titus and Griffin Prod. Co.	160	2,698.00
Jackson, Albert and Minnehoma Oil Co.	160	2,438.03
Jackson, L. B., and W. A. Wise and Amer. Pet. Co.	960	435.80
Johnson, Ike, and Henry Hornecker	160	723.64
Johnson, O. S., and J. C. Cobleigh	160	807.86
Kansas Okla. Con. Oil Co.	160	579.15
Kenosage Oil Co.	480	367.84
Kansas Osage Pet. Co.	80	46.89
Kennedy, S. G., and J. L. Kennedy	160	1,468.05
Kewanee Oil & Gas Co.	2,240	17,289.73
Knupp, W. J.	1,600	104.06
Lahoma Oil & Gas Co.	2,953.37	1,706.48
Landon, A. M.	2,560	2,569.67
Landon, A. M., and C. L. McMahon	640	559.34
Landon, A. M. and Foster & Davis, Inc.	320	165.93
Large Oil Co.	640	1,806.02
Laurel Oil & Gas Co.	640	1,565.90
Laurel Oil & Gas Co. and Neenah Oil Co.	1,174.27	1,856.97
Larkin, F. M., and Le Fever, E. W.	320	348.17
Geo. M. Reynolds	240	2,423.63
Lucas, A. W. and H. J. Steinberger	320	889.75
Lewis Oil Co.	1,280	4,937.21
Magnolia Pet. Co.	1,337.50	469.14
Mallory, J. F., and W. J. Stuart	960	557.60
Manhattan Oil Co.	4,797	26,810.55
Margay Oil Co., A. L. Funk and L. R. Davis	800	2,902.27
Markham, John H., Jr.	1,499.24	1,146.29
Marland Rfg. Co. and Kay County Gas Co.	3,840	6,742.51
Kenney Cleary Oil Co. and Tom James Oil Co.	4,000	6,367.40
Marland Rfg. Co., Kay County Gas Co., Kenney-Cleary Oil Co., Tom James Oil Co., D. R. Francis, Jr.	4,800	32,585.13
Mason, D. B., and Carter & Carter	534	3,934.27
Mason, D. B., and Waite Phillips	1,178.37	4,778.13
McGill, H. R., and Thos. E. Elliott	1,929	75.53
Middle States Pet. Co.	800	2,527.24
Mid-Co Pet. Co. and Tuloma Oil Co.	320	1,348.56
Mid-Co Pet. Co., Tuloma Oil Co. and D. R. Travis	320	385.98
Midland Oil Co.	4,800	9,932.29
Midland Securities Co.	640	16,781.87
Minnehoma Oil Co.	1,893	2,651.39
Mosier, W. T.	320	180.76
Montie Oil Co.	480	266.17
Mountain State Oil Co.	3,386.73	6,825.05
McBride, A. P.	320	67.64
McKinney, J. E., and F. M. Breene	480	12,571.15
McMan Oil & Gas Co.	160	210.88
Natural Res. Dev. Co.	1,760	17,803.69
Natural Res. Dev. Co., Md-Co Pet. Co. and Tuloma Oil Co.	480	2,723.39
New England Oil & Pipe Line Co.	320	516.43
New York Osage Pet. Co.	160	7,274.64
North American Oil & Rfg. Co.	320	943.26
Okla. Prod. & Rfg. Corp. of America	1,680	1,041.95
S. G. Kennedy & W. A. Springer.	960	13,578.25
Osage Dev. Co.	160	164.56
Osage Prod. & Rfg. Co., et al	160	562.87
Osage Star Oil Co.	160	1,027.78
Osage Oil & Rfg. Co.	3,680	190.37
O'Brien, L. A., and Aaron Cohen	160	564.22
Paloma Oil & Gas Co.	480	1,220.24
Papoose Oil Co.	160	115.89
Penn Oil Corp.	160	238.95
Penn-Okla. Pet Co., et al	480	850.18
Peters, Chas. B.	1,440	747.83
Phillips Pet. Co.	4,311.29	348.10
Plymouth Pet Co. et al	320	4,350.15
Price Oil Co.	1,200	1,535.10
Potter Oil Co. and Norwood Oil Co.	640	386,38
Pochequette Oil Co., Devonian Oil Co. and A. W. Leonard	640	11,679.10
Plover Drilling Co.	2,240	4,782.13
Prairie Oil & Gas Co.	4,840	31,861.81
Potomac Oil Co.	480	36.75
Potomac Oil Co. and Andes Oil & Gas Co.	160	203.96
Ramsey Oil Co.	1,440	664.61
Red Bank Oil Co.	2,640	7,621.35
R. & M. Oil Co.	800	591.74
Rex Oil & Gas Co. and Pyramid Oil Co.	320	2,202.87
Roxana Pet. Co.	4,000	1,683.68
Sagamore Oil & Oil Co.	378.69	366.46
Sandford Oil Co.	160	5,095.88
Sand Springs Home	3,040	5,588.34
Sand Springs Home, Geo. Kinney and C. W. Kingsbury	2,026	4,633.88
Sand Springs Home, Geo. Kinney and C. W. Kingsbury & Stuart	160	543.92
Santuna Oil Co.	480	868.84
Savoy Oil Co.	640	353.78
Shea, John J.	480	617.25
Silurian Oil Co.	840	15,635.52
Sinclair Oil & Gas Co.	2,560	17,213.91
Sinclair Oil & Gas Co and A. M. Landon	160	133.00
Sinclair Oil & Gas Co. and J. H. Markham	160	1,555.91
Sinclair Rfg. Corp. of America	4,940	70,217.60
Sivalls, J. A., Morton, et al.	640	1,730.35
Skelly Oil Co. and A. T. Ferrell	320	19,254.23
W. C. Norris and C. W. Titus	320	10,725.96
Skelly Oil Co., A. T. Ferrell, W. C. Norris and C. W. Titus	640	5,273.37
Skelton-Moore Oil Co.	964	2,205.11
Spring Oil Co.	480	1,261.98
Sparata Oil Co. and Foster & Davis.	200	616.95
Stralem, C. I.	160	1,429.00
System Oil Co.	1,920	2,028.43

Lessee	Total Acreage	Gross Production
Stekoll, Harry and Louis Appleman	320	145.00
Standish Oil Co...	1,760	5,030.33
Sterling Oil & Gas Co.	640	385.76
Texhoma Pet. Co..	320	2,985.62
The Texas Co. ..	4,800	19,077.42
Testlog Oil Co. ..	1,120	10,517.68
Tidal Oil Co.	4,117.26	30,074.37
Tidal Oil Co., Breene and O. A. Kraeer & Co. ..	140	202.48
Tidal Oil Co., Getty Breene, O. A. Kraeer & Co. ..	60	713.96
Titus, Norris & Bird	480	6,395.29
Titus, Norris & Bird & Getulius	160	1,057.75
Titus, Norris & Bird & Meeks & Kessler & Kessler ..	160	7,612.56
Twin State Oil Co.	1,440	3,980.66
Tighe, J. P.....	560	493.97
Tuloma Oil Co...	640	377.84
Tuloma Oil Co. and Mid-Co Pet. ...	1,280	1,114.96
Wahshahshe Oil Co.	640	8,773.05
Ward, James D., and No. O. Colburn	320	327.43
Warren Pet. Co. ..	480	856.95
Warren Pet. Co. and Owen-Osage Oil & Gas Co...	320	20,074.26
Westhazlett Oil Co.	320	2,098.69
Whittier, M. H. and Echo Oil Co. ...	2,100	5,039.82
William M. Graham Oil & Gas Co. and J. L. Bird...	1,500	10,229.51
Wigwam Oil Co..	1,440	7,858.44
Winona Oil Co...	4,560	19,481.53
Winona Oil Co., Markham & Breene	160	2,471.18
Wiser Oil Co.....	4,685.13	3,817.21
Wolverine Oil Co.	4,756.18	24,487.47
Workman Oil & Gas Co.	320	61.56
Wrightsman Oil Co. and Pine Inv. Co.	800	580.48
Winemiller, J. H., J. Beren, M. Rubin, L. W. Baxter and Max Pishel.	320	524.24
Yorkhoma Oil Corp.	960	140.45
Zola Oil Co.	2,312.54	5,680.27
Totals	264,483.18	1,169,772.36

North Texas Activities Featured By Two 1,500-Barrel Completions

Staff Special

FORT WORTH, July 3.—Two 1,500-barrel wells north of Breckenridge in Stephens county were the outstanding features of oil production in north central Texas during the past week. The first was a partnership well of Roxana Petroleum Company and Sapulpa Refining Company on the J. T. Ball lease seven miles north of town. The second was brought in by Walker & Perkins on the W. C. Goodwin farm, three-fourths of a mile north of the northern boundary of the town. It was drilled in on June 29.

The Plateau Oil Company's No. 1 Ward, on the east edge of the town of Breckenridge created considerable excitement by responding to a little agitation on June 30 and increasing its flow almost to its initial production. The well is a month old and in that time had diminished in output from the initial 7,000 barrels to less than 2,000 barrels. Just as the operators had begun to drill deeper the well made a flow which resembled those of the early days of its life. The test of the Stephens Oil Syndicate on the M. Pratt property six miles northwest of Breckenridge, had a showing of oil at 3,240 feet.

Mid-Kansas Oil Company's No. 1 S. H. Hill, completed at a total depth of 3,215 feet, is good for a 65-barrel pumper. The same company completed its No. 2 S. R. Hill at 3,240 to 3,255 feet which was originally reported at 1,000 barrels, but settled to less than 100 barrels a day and 5,000,000 cubic feet of gas. Mahlstead & Mook completed their No. 1 W. H. Ackers for initial production of 750 barrels at a depth of 3,105 to 3,140 feet. Snowden & McSweeney's No. 2 Ackers and No. 1 J. Ashburn were brought in for 200 barrels each, the former at 3,025 feet and the latter at 3,075 feet.

Chapman, Clark & Harbin brought in their No. 2 A. S. Veale at a depth of 3,040 feet producing 15,000,000 cubic feet of gas, and George W. Walker's No. 1 B. S. Walker is producing 20,000,000 cubic feet of gas. The Texas Company's No. 2 on the Black Brothers acreage is incomplete at 3,420, but flowing 30 barrels of oil. Gulf Production Company's No. 1 D. B. Crawley was completed at a depth of 3,335 feet and has 2,000 feet of oil in the hole. The well completed on the property of the Satterfield heirs by Hicks and others is flowing 50 barrels from a total depth of 3,200 feet. Magnolia Petroleum Company's No. 1 F. N. Trammell has 500 barrels of oil in the hole at 3,280 feet, and Lone Star Gas Company's No. 4 Heatley is flowing 200 barrels of oil and an equal volume of water from 3,180 feet. Lane Oil Syndicate's No. 1 J. M. Cook has 1,500 feet of oil in the hole and is 3,315 feet deep.

The largest producer among recent completions in Eastland county was a 200-barrel well brought in by Ardizzone-Braden Oil Company's No. 3 Kincaid, depth 3,185 to 3,215 feet. Next in rank of initial production was Magnolia Petroleum Company's No. 6 Carruth reported early in the week. It is in the Desdemona neighborhood and produced 250 barrels daily from a depth of 2,775 feet. Magnolia's No. 2 Beardon flowed 50 barrels from 2,950 feet and Kirkland & Weaver's No. 1 W. R. White is pumping ten barrels. Unit Oil & Development Company's No. 1 Burkett is producing 13,000,000 feet of gas. Folsom Petroleum Company's No. 2 Hawks is a 45-barrel pumper from 3,555 feet.

D. A. Upham's No. 2 Belding flowing 15 barrels a day from 3,740 feet was the only oil well completed in Palo Pinto county during the week, but four gassers were brought in. Empire Gas & Fuel Company's No. 1 Gilbert is producing 7,000,000 cubic feet from a depth of 4,040 feet; Lone Star Gas Company's No. 2 Edwards is producing 4,000,000 cubic feet daily from 1,010 feet; its No. 11 E. O. Redford is making 2,000,000 cubic feet daily from a depth of 1,000 feet, and Pierce Oil Corporation's No. 1 Ackerman is producing 12,000,000 cubic feet daily.

In Comanche county Empire Gas & Fuel Company completed its No. 2 Lindley at depth of 2,725 feet, 25 feet in the pay and shot the hole. The result was a 15-barrel flow thru a bridge. Atlantic Oil Production Company's No. 3 W. L. Lusk is making 80 barrels at 2,580 feet .

Gladys Bell Oil Company completed three wells in Coleman county. No. 5 Pope is producing 450 barrels; No. 2 Fuller is flowing 150 barrels and No. 5 Garrett is flowing 5,000,000 cubic feet of gas from depth of 4,165 feet. Santa Anna Oil & Gas Company has completed its No. 1 Kingsbury for 20 barrels daily production.

In Mitchell county Underwriters Producing & Refining Company completed its first well on the Texas & Pacific Railway survey, bringing in a 15-barrel well from 2,440 feet. Consolidated Oil Company's No. 1 Vestal in Callahan county, several months old, is now producing 40 barrels of oil and a like amount of water from 3,765 feet.

SHREVEPORT, LA., July 2.—Coming up on suspension of the rules, the "blue sky" law has been passed by the lower branch of the Louisiana legislature, and sent to the senate for its action, which is also confidently expected to be favorable as the bill is an administration measure and the majority of both branches of the legislature are working in harmony with the governor. This measure was prepared by State Bank Examiner L. E. Thomas at the request of Governor Parker. Its author in the lesiglature is Representative S. Parent, of Point Coupee parish. The law has some sharp teeth, so as to diminish the dangers from shady stock and similar operations.

SHREVEPORT, LA., July 2.—The state supreme court this week handed down a decision affirming the judgment of the district court of Caddo parish confirming title to leases in the Pine Island field in R. T. Layne against the Mohawk Oil Company. The decision is regarded as the end of litigation continuing for the last three years involving several hundred acres of rich leases in that district, and between $300,000 and $400,000 from development, held in escrow pending final judgment.

By Special Correspondent

PITTSBURGH, July 5.—That West Virginia gas wells must be available to Pennsylvania residents and that conservation of gas be practiced by all were the chief points developed at a conference at the Pittsburgh Bureau of Mines Friday of public service commissioners from Pennsylvania, Ohio, West Virginia, New York and Maryland. The purpose of the meeting was to consider the Steptoe act, which Pennsylvania and Ohio are fighting in the United States Supreme Court.

Week's Interest Centers In Burgess Sand Well Near Cleveland

Staff Special
TULSA, July 3

THE most important development during the past week in Oklahoma is the finding of a Burgess sand well in the southwest corner of Sec. 19-21-8, southwest of Cleveland. This well is a mile and one-half south of the Gypsy Oil Company's Diem well, in Sec. 18, which is also producing from the Burgess sand horizon, and three ane one-half miles south of the big Burgess sand well of the Gypsy, on the famous Boston lease, and tho there are a number of dry holes on the east side of township 21-7 that have been drilled past the producing horizon of the Burgess sand, there is still a wide stretch of territory on the west side of Sec. 21-8 that may be re-drilled, after having been condemned. The test above referred to that will probably cause a thoro testing out of the deeper pay possibilities, is being drilled by Guffey-Gillespie Oil Company, which found the Burgess sand at 2,737 feet, and is standing 1,800 feet in oil, only one foot in the pay.

Beggs District

John H. Rebold's test on the south line of the southeast of Sec. 15-14-11, is standing full of oil with the sand barely touched at 2,816 feet. Tankage is being set and preparations made to drill in. It is one-half mile north of the wonderful Phillipsville pool, opened by Waite Phillips, and will prove a most important extension to this pool. It is expected to prove equally as good a well as the Phillips, Gladys-Belle, Lyons Petroleum Company and the Oklahoma Central Oil Company's wells in Sec. 22.

The greatest flush production in Oklahoma today is coming from the Phillipsville pool. Pipe line runs show that this small pool is producing over 18,000 barrels per day, approximately, 13,000 barrels of which is coming from Waite Phillips' wells. Mr. Phillips, who has just purchased the old Okmulgee Producing & Refining Company's refinery at Okmulgee, is probably the largest individual producer in the Mid-Continent field at this time, being credited with a daily production of, roughly, 20,000 barrels.

The largest well in the Beggs district for the week is the Gladys-Belle Oil Company, No. 4 Thompson, in Sec. 22-14-11. It is flowing 3,200 barrels, at 28 feet in the Wilcox sand, found at 2,768 feet. The Eastern Oil Company, No. 3 Jefferson, in the center of the west line of the northwest of the northwest of Sec. 32-15-11, is making 400 barrels in sand from 2,520-29 feet. It is located in the eastern extension of the Osage Hill pool. A half mile in advance of production to the east, Gillespie and associates, No. 1, Haynes, in the southwest corner of the southeast of Sec. 11-15-12, northeast of Beggs, found sand from 2,095-2,110 feet, and is making 6,000,000 feet of gas. Spurgeon and others test on the B. Wildcat farm, in the northeast corner of the southeast of the southeast of Sec. 32-16-13, in the Bixby district in the extreme northeastern part of Okmulgee county, is a 5,000,000-foot gasser in sand found from 1,864-72 feet. It is a little over a mile southwest of the nearest producing gas well.

Hewitt District

The Hewitt field of Carter county, which has been characterized by wide range of producing horizons, (wells producing from 1,300-2,200 feet), now reports the shallowest well in the history of the field. The Simpson well in the southeast corner of Sec. 9-4S-2W found sand at 1,235 feet, and 17 feet in is making 250 barrels. It is one-half mile north of production.

In the northwest corner of Sec. 22-4S-2W, Baker and Strawn have a 200-barrel producer in their No. 3, which found sand from 1,260-90 feet. This well also is producing from a shallower horizon than has been encountered in this field heretofore. The Humble Oil & Refining Company No. 3, on the Ward farm, in Sec. 22-4S-2W, is flowing 400 barrels from sand found at 1,960 feet. It will be drilled deeper.

Stephens County

The new Duncan field of Stephens county shows pipe line runs for the past week of 8,500 barrels daily from 24 wells or an average of 354 barrels per well. No important extensions to this pool have been recorded, the best well of the week being the Empire Gas & Fuel Company's No. 12 on the Surber farm in the extreme southwest corner of Sec. 33-1S-8W. Sand was found from 1,683-1,700 feet and it is flowing 350 barrels. McMan Oil & Gas Company's No. 2 in the northwest of Sec. 33-1S-8W has developed a high gas pressure which is delaying the completion of this well. It is making about 200 barrels as it stands.

Osage

The Osage Reservation is at this time producing roughly 45,000 barrels daily with but one-third of the entire reservation under lease for development. Production figures for 1919 show that this territory averaged slightly over 40,000 barrels daily and should the 4,800-acre rule be revoked this county can be expected to show a continual increase, particularly from the deeper pay horizon as is evidenced by the opening up of the Burgess sand pool north of the Arkansas river by the Gypsy Oil Company on the famous old Boston lease. This lease, which had at one time 22,000 barrels of flush production from the shallower depths, is now making over 10,000 barrels daily below the Mississippi lime.

And while many geologists claim that the producing sand found in parts of the Western Osage is the Wilcox sand, practical operators of long years' experience are of the opinion that the Wilcox pay will be found deeper.

Current completions show but an ordinary run of wells, the only extension recorded being Chandler's No. 1 in the center of the southeast of Sec. 18-24-11, near Bigheart. It is a 15-barrel well after a 180-quart shot in sand found from 1,627-1,697 feet. It is a half mile from production. A half mile in advance of production to the northeast, the Finance Oil Company's test in the southwest corner of the nrothwest of Sec. 27-23-11 is making 20 barrels in sand from 1,750-69 feet after a 90-quart shot.

Garvin County

The Magnolia Petroleum Company, who recently completed a 42,000,000-foot gas well in Sec. 16 and thereby brought this county into the limelight, has completed another gasser good for 25,000,000 feet a half mile from the discovery well. The discovery well found the sand at 1,384 feet but the more recent completion picked it up at 1,125 feet, 160 feet higher. The difference in producing horizon of these wells is not entirely accounted for by surface elevation.

Rumors that cannot be confirmed at this time have it that the Lord Cowdray interests of England have bought into this territory and it appears entirely reasonable as various English interests have made purchases in the Mid-Continent field in the past six months.

Maramac

The discovery well of the new Maramac pool in Sec. 4-20-6E, Pawnee county, has increased its flow from 500 to 650 barrels and is believed to be drilling itself deeper. A peculiar feature of this well is that when the well produced at a rate of 500 barrels a day the oil tested 37.3 gravity, whereas, since it has increased its flow, it only shows now 34 gravity. Many engineers ascribe this change to the fact that the deeper a well, the warmer the gas, and a corresponding increase in its power of absorption. Be that as it may, the company now running this oil finds itself paying a 50-cent premium for 34 gravity oil, the highest price paid for this grade of oil in the Mid-Continent field.

The wide divergence of opinion as to whether this well is producing from the Skinner or Bartlesville sand has caused many operators to refer to it as the "Maramac sand," a custom that Oklahoma operators have a habit of doing.

Interest in this territory has been checked to considerable extent due to the fact that C. B. Shaffer's test in Sec. 4-21-6E in that district which found sand from 2,925-2,929 feet failed to get sufficient sand to make a commercial producer and it is now drilling at 2,962 feet.

Kansas

This state, for the first time in many weeks, shows an appreciable gain in daily production. The older fields continue to show an alarming decline and operators

are hard put to develop new pools to counteract this slump.

New Pools

In eastern Butler county, the Columbus Oil & Securities Company has apparently opened up a most likely pool. Their test on the Young farm in Sec. 27-26-7 is swabbing 150 barrels daily and will probably make a 100-barrel well. Sand was found at 2,165 feet.

Nearest production to this well is four miles northeast but it is a rank wildcat in that it is on an entirely different structure from the small production to the northeast and was drilled by Columbus Oil & Securities Company on acreage given them by the Empire Gas & Fuel Company for a test well. The structure was checked and mapped out by the geological department of the Empire Gas & Fuel Company and this company owns a large block of acreage on three sides and will immediately start drilling offsets. The impression that the Columbus Oil & Securities Company is a subsidiary of the Cities Service or Empire Gas & Fuel Company is erroneous.

Three miles northwest of Atlanta, the Little Pirate Oil & Gas Company's test on the Cooper farm in the northwest corner of Sec. 6-30-6, Cowley county, found sand at 2,788 feet and at 20 feet in is standing full of oil. It is two miles from the nearest producing field in township 29, range 5, and will probably open up a small pool in this locality.

Larger Kansas Completions

The Peabody and Covert-Sellers fields are largely responsible for the increase shown by Kansas for the past week The Orlando Petroleum Company's No. 2 on the Brooks farm in the center of the south line of the southwest of the northeast of Sec. 10-22-4 is making 600 barrels in sand found from 2,508-2,519 feet. In Sec. 4-23-4, the Texhoma Oil Refining Company's No. 5 Holden in the northeast corner of the southwest of the southwest, is a 700-barrel well in sand found from 2,463-2,468 feet and the same company's No. 8 and 9 on the Hawk farm in the same section are good for 200 and 700 barrels respectively from the same producing horizon.

Completions And New Production On Increase In North Louisiana

SHREVEPORT, LA., July 1.—Compared with the record of the previous week, considerable improvement in both number of completions and initial production was shown in the north Louisiana fields during the week just closed. All told there were 29 completions, including one gasser, 7 failures, and 21 producers yielding combined initial output of 8,863 barrels, while during the previous seven days there were 19 completions, of which 2 were gassers, 7 failures and 10 producers making 1,594 barrels of initial production.

The Homer district, as usual, showed the largest yield, there having been recorded 14 producers with total initial production of 7,108 barrels, against only 5 producers and 1,419 barrels of initial yield during the previous week. Of the 7 failures in north Louisiana the past week, 6 were in the Homer district, against 3 the previous week.

Five new producers making initial production totaling 1,665 barrels, were reported in the Bull Bayou district, compared with 3 producers making only 135 barrels of initial production during the preceding seven day period. One well was abandoned against two during the previous week. Of the Bull Bayou developments, 550 barrels of the new oil came from 2 producers in De Soto parish, and 865 barrels from 3 producers in Red River parish.

In Caddo parish there were 2 producers yielding 90 barrels together, against 1 well making 20 barrels the previous week, and in east Texas no completions were reported during the past week.

The week's report was featured by an extension of the Bull Bayou district approximately one-half mile northwest, thru the bringing in of the Palmer Trust's Jenkins No. 2, Sec. 21-12-11, De Soto parish, with initial flow of approximately 500 barrels. This is one of the most interesting developments in north Louisiana in several weeks.

The only gasser of the week was the Louisiana Gas & Fuel Company's Crawford, Jenkins & Booth No. 2, Sec. 18 16-11, which at 821 feet showed 22,000,000 cubic feet of gas, in Bossier parish. It was the only completion in Bossier.

The Texas Company's Roberts-Brown Lumber Company No. 2, Sec. 17-11-12, reached 3,118 feet with salt water in evidence and was abandoned The only other failures of the past week were five in the Homer district, namely: Arkansas Natural Gas Company's Wheeler No. 120, Sec. 16-21-7, dry and abandoned at 3,000 feet, and the same company's Shay-Guy No. 132, Sec. 36-21-8, salt water and abandoned at 1,547 feet; Homer Amalgamated Oil & Refining Company's Kinnebrew No. 2, Sec. 5-20-7, salt water and abandoned at 1,427 feet; Keen & Woolf's Norton No. 3, Sec. 13-21-8, at 1,415 feet, pumping salt water; White Oil Corporation's King No. 1, Sec. 13-21-8, salt water and abandoned at 2,425 feet, and the Texas Company's Phillips No. 1, in Sec. 4-20-8, dry at 3,173 feet.

Caddo's only two completions were the Jolly-Spearman No. 5, Sec. 23-22-15, at 1,083 feet, and the Moss No. 16, Sec. 24-22-15, at 1,057 feet, both belonging to the Louisiana Consolidated Oil & Refining Company, and yielding 40 barrels and 50 barrels of initial production, respectively. The former came in June 23, and the latter June 22.

Four hundred and seventy-eight barrels of new production were obtained from 4 wells completed in the Homer district by the Standard Oil Company, which suffered no failure during the week. Two of the Standard completions were in 24-21-8, being Shaw-Palmer No. 9, at 1,400 feet, 150 barrels, and Palmer-Langston No. 17, at 1,410 feet, 200 barrels; the other Standard completions were in 31-2-7, being Shaw-Palmer A-5, at 1,344 feet, producing 28 barrels, and Shaw-Palmer A-8, at 1,350 feet, 100 barrels.

The Simms Oil Company came next to the Standard, getting 3 producers, 2 being in 17-21-7, Garrett No. 5, at 1,475 feet, yielding 1,000 barrels, and Garrett No. 9, at 1,370 feet, yielding 700 barrels. The other Simms completion was Garrett No. 8, in 18-21-7, at 1,394 feet, 750 barrels. The Simm's Company's new production, 2,450 barrels, was the largest obtained by any company during the week.

The Gulf Refining Company got a couple of wells in 20-21-7, being West No. 12, at 1,410 feet, 720 barrels, and West No. 15, at 1,403 feet, 710 barrels.

Thru Cheatman No. 11, in 31-21-7, which came in at 2,058 feet, the Frost Oil Company added 250 barrels of initial production; the Homer Oil Corporation added 150 barrels thru completion of its Barnes-Shaw No. 3, in 30-21-7, at 2,084 feet; the Louisiana Oil & Refining Corporation added 300 barrels thru completion of its Langston A-10 in 19-21-7, at 1,224 feet; the Sinclair Oil Company added 500 barrels by completing Langston No. 7, in 18-21-7, at 1,402 feet; and the other completion in the Homer territory, the Garrett No. 1 of the Tulsa Oil & Gas Company, added 300 barrels, having come in at 1,472 feet.

All of the wells listed above, except the two in Caddo, are in the Homer district, and it is noted that most of them came from the shallow sand.

In the Bull Bayou district, the Fortuna Oil Company got two new producers, one in the DeSoto parish, the Pugh No. 33, Sec. 12-12-11, at 2,707 feet, 50 barrels, and the other in Red River, the Pugh-Polley No. 6, in 7-12-16, at 2,715 feet, 600 barrels. The Palmer Trust's Jenkins No. 2, Sec. 21-12-11, which extends Bull Bayou about a half a mile northwest, is the only other producer completed in DeSoto parish, but in Red River parish there were two other producers, namely: Hughes Petroleum Company's Johnson No. 1, Sec. 17-12-10, at 2,733 feet, 50 barrels, flowing, and Tex-La-Homa Oil Company's Boylston No. 2, in 8-12-10, at 2,778 feet, 15 barrels, flowing.

260-Barrel Well In Ohio Leads In East

By Special Correspondent

PITTSBURGH, July 6.—Operators are taking chances drilling in localities that have been condemned many times in the past, and small pumpers, an occasional well of more than average size, an abundance of dry holes and gassers are the reward. In the eastern fields there were 45 more wells completed in June than in May, and still the new production aggregated only a little more than 500 barrels. The large producing interests, the Pittsburgh companies, with millions of dollars at their disposal for geologists, scouts, drilling crews, and ample materials, have been no more fortunate than the small concerns and the individual operator. It is generally understood that none are holding known producing territory in reserve, and some fanciful rumors are heard of the larger companies having been offered good prices for their storage oil and their production for months to come.

The same energetic search for gas is in progress as all interests unite in asserting that Western Pennsylvania faces a shortage of gas. The McKeesport field, once the hope of all, is

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only doing about 8 per cent of its initial production.

Honors for the week go to the deep sand field of Ohio which developed a 260 barrel producer. It is the Chartiers Oil Company's No. 161 on the Hocking Valley Products Company's property, located in Sec. 5, Green township, Hocking county, Ohio. The well was drilled in early last week and shortly afterward was given a shot. Another good Ohio producer was found by the Kachalmacher heirs, operating on the Lambert farm in Sec. 35, Falls Gore township, Hocking county, when they got a 90-barrel well in the Clinton sand.

The Pure Oil Company got a light pumper on the Myers farm in Licking township, Muskingum county, and the Ohio Fuel Supply Company got a 5-barrel Berea grit pumper at a test on the Staker farm in Harrison township, Muskingum county. The Preston Oil Company struck a good gasser in Starr township, Hocking county. In the Corning district, Perry county, Nash Bros. No. 3, completed in the Berea grit, is a 10-barrel pumper. Jenins & Holden have a 10-barrel pumper in their No. 14 on the McDonald farm in Pleasant township, Perry county. The Natural Gas Company of West Virginia got a gasser in Meade township, Belmont county, and their completion in Smith township is a small producer. Drilling thru the 600-foot sand the Ohio Fuel Supply Company got an 8-barrel pumper on the Williams farm in Caldwell district, Buffalo township, Noble county.

Pennsylvania producers of more than average size numbered three, this being a rather noteworthy showing for the Keystone state. One well is in the Unity district, Allegheny county, one in Washington county, and the third in the Graysville district, Greene county. Half a dozen wells were completed elsewhere, including the Beaver-Economy, Duff City, Baden and Taylorstown districts, but nothing of importance developed.

The pay was reached in the fifth sand in a completion made by William McK. Smith, operating on the Barry farm, in South Franklin township, Washington county, Pa., and the well now is doing 50 barrels daily. In the Graysville district, the South Penn Oil Company's No. 7 on the Harvey farm is producing at the rate of 130 barrels a day. The Philadalphia Company got a gasser in Washington township, and the Rhinehart Carbon Company got a gasser in Morris township. Other Greene county tests are under way for these companies: Manufacturers Light & Heat, Risk Oil & Gas, Nineveh Oil & Gas, Saney Oil, Sampson Oil & Gas, Wyoming Fuel Oil, and Waynesburg Product Company.

The Unity district, Plum township, Allegheny county, well is Clark & Vincent's second test on the McMahon farm, and it is producing at the rate of 50 barrels a day.

In the Mannington district, Marion county, West Virginia, the Eastern Petroleum Company has drilled its No. 3 on the Elias Wilson farm into the Campbells Run sand and it is showing for a good producer. The well produced close to 100 barrels the first 24 hours. In Grant district, Harrison county, the West Virginia Central Gas Company has a 15-barrel pumper at No. 7 on the W. B. Vanhorn farm.

Louisiana Common Carrier Pipeline Bill Is Now Up To State Senate

By Special Correspondent

SHREVEPORT, LA., July 2. — All opposition to the legislative bill Representative J. S. Douglas, of Caddo, providing that pipe lines in Louisiana shall be common carriers has been withdrawn, due to all interests engaged in the controversy agreeing to an amendment defining common carrier, and, as a result, the pipe line measure very probably will pass the senate unanimously when it comes up for a vote there. The house of Representatives, at Baton Rouge, La., earlier in the week adopted the bill, without amendment by a vote of 63 to 42, and also adopted by an overwhelming majority, the bill forbidding discrimination in oil purchasing, as it did also the two oil warehouse measures. Thus, all of the four oil legislation measures, regarded as administration measures, went through the lower house of the legislature, upon recommendation of the committee on conservation, which held several public hearings on the pipe line proposal, at which there was warm discussion and argument by representatives of the independent oil men favoring the pipe line measure, independents opposing it, and the Standard Oil Company of Louisiana, also opposing it.

Following closely the action of the house adopting the pipe line measure, it became known that a vigorous fight was to be made in the senate to sidetrack this measure. With this end in view, Senator Butler of Terrebonne parish introduced a resolution providing that a special commission be appointed to investigate the pipe line situation and study laws of other states, and report within the ensuing year to the governor, also to the constitutional convention. In other words, the resolution, it was considered, would, if adopted, have practically killed the oil legislation through the indefinite delay of senate action.

In face of this plan to sidetrack the issue in favor of the lengthy investigation, and owing to existing bitter differences on legal and technical points, a conference of the different oil interests was called, with Governor Parker presiding, and as a result of this conference, in two or three sessions, the agreement mentioned was reached today.

The amendment as agreed to was written by the independents, as represented by Thomas O. Harris, secretary of the North Louisiana Independent Oil and Gas Men's Association, and Attorney Leland H. Moss, representing those interests. Five minutes after it had been presented, it was accepted by Judge T. M. Milling, representing some independent oil interests opposing the pipe line measure as unamended, and also by Hunter Leake, counsel for the Standard.

The amendment, as agreed to, reads: "Be it further enacted that the term common carrier as used in this act shall include all persons, firms, or corporations engaged in the transportation of crude petroleum as common carriers for hire; or which upon proper showing, may be legally held to be common carriers from the nature of the business conducted or from the manner in which such business is carried on."

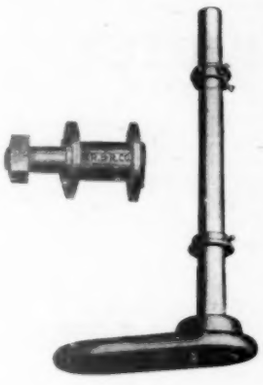
The question of definition according to advices from the capitol, can be explained as follows: Under the proposed bill, any pipe line which accepted even a quart of oil other than that produced by its own wells, became thereby a common carrier, and could thereafter not refuse to transport any oil offered to it any more than a railroad could refuse to sell a ticket to any one who cared to buy one. This, the independents insisted, would make it impossible for any large corporation, which held the pipe line facilities from the production fields, to throttle independent production by refusing to transport the oil of the independents to the markets.

The Standard Oil interests countered to this argument that their pipe line had been built not as a common carrier but as an adjunct to their Louisiana refinery at Baton Rouge. If the law were enacted, they declared, independent producers could force them to carry the oil to Baton Rouge, and there load it aboard tank steamers to be refined in Texas or Cuba or anywhere else. This, they added, would mean the curtailment of the Louisiana industry at Baton Rouge, because of the limited capacity of their pipe line. If, on the other hand, they refused to carry any oil not produced by Standard wells, the refinery at Baton Rouge would again be idle a part of the time, since they did not produce oil enough to keep the refinery going at capacity.

This contingency, of course, would not arise, it was argued, if the pipe lines were not defined to be common carriers. The moment they transported any oil not produced by the company operating the pipe line, the definition as finally adopted meets every point since it permits the Standard Oil Company to transport oil not its own, and the same time gives the independent producers the right to go to court at any time in case the Standard or any similar corporation should attempt to throttle any individual producer and under the terms of the act itself force the company to transport the oil to any designated market.

The agreement is taken as bringing to an end a long and bitter controversy over pipe line legislation in Louisiana, and it is taken as meaning that Senator Butler's bill calling for a special committee to investigate and report next year will be withdrawn, and the pipe line bill, as amended, will have a smooth journey through the legislature.

LEXINGTON, KY., July 2. — The Heather Oil Company, principal place of business Lexington, capital stock $50,000, has filed articles of incorporation. Incorporators are George McLeod, Versailles, Ky.; J. Stoddard Johnson, Louisville, and H. L. Williams, Winchester, Ky.



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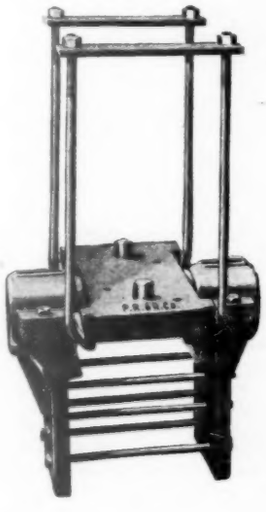

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Louisiana: Shreveport, Homer, Gahagan, Minden.

Oklahoma: Tulsa, Drumright, Hominy, Okmulgee, Walter, Pawhuska, Beggs, Blackwell, Wilson.

Ohio: Cleveland.

West Virginia: Clarksburg.

Electra Production Passes Fifty Million Barrel Mark; Other Pool Figures

Staff Special

WICHITA FALLS July 1

THAT part of the Burkburnett producing area which is distinguished from the Northwest Extension as the riverbed section and that part sometimes called the Emerich pool are showing the highest per well average in daily production for the district, although the wells in each classification total relatively few as compared with older and larger divisions of the general sand country around Wichita Falls.

The Emerich pool, beyond the Northwest Extension, has at the present time roundly 100 wells to its credit with daily average production of roughly 165 barrels each. Riverbed producing wells number approximately 40 with a well average daily of about 75 barrels. The Burkburnett Northwest Extension with its roundly 1,285 wells is averaging about 35 barrels each and the earlier Burkburnett townsite division with approximately 1980 wells is averaging less than five barrels each, daily. Southeast of Burkburnett, in the deep (1200 foot) division of the so-called Texhoma pool, 50 wells are averaging about 90 barrels, each, daily and in the Kemp-Munger-Allen partially proven district, southwest of Iowa Park, roughly 20 wells are averaging about 165 barrels, daily.

Operators, who study the Greater Wichita Falls territory with an eye for its future as well as the present, look upon the history of sand country development in North Texas as giving an index to what may be expected to result. They take into consideration, however, the town lot drilling at Burkburnett and an almost equally intensive campaign pursued in the Northwest Extension pool, as against sane drilling up of the old Electra field along the Wilbarger-Wichita county line and other sanely operated divisions.

In the language of the street, "the curse is off Wichita Falls." It isn't meant to say that the grafter, the fake stock promoter or the sharpshooter is gone as a whole—far from it—but the oil industry to a large extent controls at this time the situation in the general territory; and by the oil industry is not meant, necessarily, the major companies, who although both active and factors in the situation are greatly outnumbered by the stable Independent interests who produce oil and are not interested in the sale of stock.

Therefore, with conditions generally understood and after consideration of the intensive Burkburnett development as compared with the saner operations originally known in the Greater Wichita Falls district it becomes pertinent to give attention to the results of drilling. Naturally, with a part of the riverbed area to be considered profitable for drilling up further; additional possible production being likely in the vicinity of the Emerich wells and with the limits of the 1200-foot pay in the so-called Texhoma pool remaining undefined, it is within their boundaries and around the wells in the K. M. A. territory that most of the current interest in the Wichita Falls territory rests. The remainder of the sand country territory has reached its first phase of a settled state.

Three-Fourths Production Settled

The production from the Emerich pool, the Riverbed area, the Texhoma "deep" division and the Kemp-Munger-Allen territory totals daily about one-fourth of the barrelage coming out of the Greater Wichita Falls district, or roughly 25,000 barrels of the 100,000 barrel total. Average daily total production of the Northwest Extension pool now is about 43,500 barrels and of the Burkburnett townsite about 9,400 barrels. The first producing well completed on the townsite was in July, 1918, and in the Northwest Extension the "discovery" was made in April, 1919. The Electra pool, which dates from October, 1911, having at this time a total of more than 1,400 producing wells to its credit, is making 10,250 barrels daily, or more than the comparatively recent Burkburnett townsite.

It is interesting to note that of the roundly 100,000,000 barrels of crude oil produced in the Greater Wichita Falls district, since the first well was completed at Petrolia, Clay County, in 1904, down through Electra and the fields that succeeded them, half of that total recovery has come from Electra, which with the month of June passed its 50,000,000 barrel mark. The Burkburnett Northwest Extension is still under 18,500,000 barrels total crude oil produced and the townsite has made in round figures 13,000,000 barrels to date. Petrolia, the first field to be developed in this general territory and dating from 1904, has produced a total of roundly 3,000,000 barrels of crude oil since its discovery.

Summary of Results

Here is an idea of results obtained from the various divisions and a basis upon which to base deductions of future possibilities, taking into account, of course, that the extent of proven ground in at least some instances is apt to be added to at any time:

Division	Proven Acreage	Average Sand Depth	Per Acre Production June 1	Per Well Average June 1
Northwest Extension	2495	21.2 ft.	7145	33.90 bbls.
Burkburnett Townsite	1500	29.1 ft.	8495	4.75 bbls.
Riverbed Pool	65	19.5 ft.	5605	75.65 bbls.
Emerich Pool	200	19.9 ft.	5110	161.75 bbls.
Kemp-Munger-Allen	75	5.0 ft.	1205	165.00 bbls.
Electra	8175	....	.....	.....
Sunshine Hill	550	....	5725	2.15 bbls.
Burkburnett Old Field	7110	....	....	8.85 bbls.
Texhoma Shallow	1575	....	1515	1.10 bbls.
Texhoma 1200 Foot	250	18.5 ft.	1500	91.05 bbls.
Iowa Park	625	9.4 ft.	1350	4.93 bbls.
Holliday	400	6.7 ft.	568	18.23 bbls.
Petrolia	4500	14.2 ft.	704	.91 bbls.

Based on figures included in the accompanying table, the Greater Wichita Falls district with its roundly 7,100 producing wells and a total of 1,650 abandonments from the time of the Petrolia "discovery" down to date has a total of approximately 27,500 acres of proven ground; per acre production for the entire area, averaging the several pools, has been almost 3,750 barrels and an average sand depth is in excess of 15.5 feet. These figures, in connection with average daily production at present hovering around the 100,000 barrel mark and a total recovery for all fields since the first well came in of 100,000,000 barrels—especially when taken in connection with present per well averages by pools, or divisions—give an index to the future of the sand country development.

SHREVEPORT, LA., July 2.—In charging the federal grand jury at Alexandria, La., this week, United States Judge G. W. Jack of the western district of Louisiana, instructed the jurors to investigate allegations that the mails have been wrongfully used in the interest of questionable oil stock promotions, either thru sending circulars and letters or newspapers in which the concerns in question have made false statements thru the mails with the object of inducing the public to buy stock. Judge Jack urged that investigation be made especially of many new stock companies which have sprung up in the last few years. Should it be found that the laws have been violated, he requested that indictments be returned and declared the accused should be prosecuted.

FORT WORTH, July 3.—Breckenridge, the county seat of Stephens county, Texas, for many months exploited as the largest town in America off the railroad, has lost its distinction in this respect. The Wichita Falls, Ranger and Fort Worth railroad passing thru Breckenridge is now in operation.

In the issue of June 23, **National Petroleum News,** Henry L. Doherty was credited with the joint control of Carib Syndicate, Ltd., which has recently completed an important well on the Barco concessions in Colombia. General Asphalt should have been named as the company holding joint control of Carib.

Improved Pipe Line Service Starts Work In Eastern Kentucky

By H. L. Wood

LEXINGTON, KY., July 5. — A synopsis of the statement just issued by the tax commissioner of Kentucky dealing with petroleum shows the following production and pipe line runs for April and May. April fell slightly under March, but May made an encouraging gain:

Purchasing Companies

	May (In Barrels)	April
Cumberland P. L. Co.	326,230.04	327,886.54
Eastern Gulf Oil Co.	14,082,49	8,195.49
Great Southern Refg. Co.	107,881.58	99,183.93
Indian Refining Co.	181,771.33	149,563.72
National Refining Co.	27,908.57	25,593.08
Neha Refining Co.	5,710.53	5,271.05
Swiss Pipe Line Co.	8,230.77	5,285.39
Old Dominion Oil Co.	47,273.55	49,870.15
Warren Oil Co. of Pa.	13,102.06	11,161.14
Wood Oil Co.	460.98	463.30
C. E. Daugherty & Co.	.....	106.93
Totals	732,651.90	682,579.72

The Aetna Refining Company, of Louisville, is using about 4,000 barrels a day in its Louisville refinery and has buyers in the field, but its activities are not specifically itemized in the list.

Interests identified with the Royal Dutch-Shell syndicate are now starting work at Bowling Green to install pipe line and terminal facilities to handle their own production—the Coulter-Allen.

May increase, 50,072.18 barrels, or a daily average of 1,615.23 barrels. Daily average runs in May, 23,633.93 barrels.

The figures given show the crude oil actually marketed each month on which taxes are paid as production. While very little crude oil is run to storage tanks by producers in Kentucky, there is considerable oil shut in because there is no pipe line connection to completed wells, many of which stand as shut in after completion. Both Allen and Warren counties have considerable quantities of this shut-in production—Warren particularly—and a number of other counties have never marketed any oil, but can show quite a total of completed wells made necessary to comply with lease terms or to test out acreage to determine its value. Simpson county, perhaps, can show more shut-in wells than almost any other county after Allen and Warren.

Pipe line companies in Kentucky do not care to lay lines for anything under 500 barrels a day of "settled" production, and production cannot become settled until wells have been produced until the flush oil has been pumped or flowed off, which sometimes takes several months. If pipe line connections were available many more wells would be drilled, production in places would be increased and much acreage brought into development that now lies dormant.

Marketed Production by Counties

	May (In Barrels)	April
Allen	88,028.03	62,892.67
Bath	1,994.53	1,006.54
Estill	102,059.18	103,392.79
Floyd	538.98	416.99
Jackson	77.02	158.00
Johnson	823.90	474.98
Knott	360.03	.....
Lawrence	16,122.90	17,117.48
Lee	443,425.99	416,228.67
Lincoln	639.80	1,425.53
Menifee	18,161.94	18,658.10
Morgan	1,893.97	1,251.98
McCreary	618.04	480.99
Powell	28,274.92	29,204.96
Warren	2,405.23	3,789.66
Wayne	14,943.94	14,694.30
Whitley	140.55	142.12
Wolfe	12,142.95	11,243.96
Totals	732,651.90	682,579.72

Lee county, it will be seen, showed an increase in May of nearly 1,000 barrels a day over April, indicating that it has not yet reached a permanent slump into settled production. Furthermore, that county is producing nearly two-thirds of the total production of the entire state and, with Estill county, accounts for the big end of Kentucky oil production.

Allen county's May increase over April was almost 1,000 barrels a day; however, it is probable that part of the oil run from the Sledge pool— which lies in both Allen and Warren counties—should be credited to Warren county. Likewise the Springer pool lies in both Allen and Simpson counties and the pipe line takes the oil to Franklin, county-seat of Simpson county, and Simpson county does not appear in the producing list. The Keen pool, south end of Allen county, with twelve completed wells, has about 1,500 barrels a day developed that is not handled. Not all of the oil produced in the Sledge pool is taken by the pipe lines.

Apparent Inconsistencies

Magoffin county does not appear in the producing column, but oil is now being run from that county thru the line of the Cumberland Pipe Line Company recently completed into Magoffin and Johnson counties that began taking crude June 1. The New Domain Oil & Gas Company has been running oil from Floyd county—adjoining Johnson county on the south—nearly twenty years, and the Ohio Fuel Oil Company has been running oil from Lawrence county—adjoining Johnson county on the north—eighteen years from about sixty wells. The Union Oil & Gas Company recently began running oil from Lawrence county and the New Domain Oil & Gas Company is now actively drilling for production in that county. The trunk line of the Cumberland company connecting with the line of the Eureka Pipe Line Company in West Virginia extends thru Menifee and Morgan counties and has been taking oil there several years, the Cannel City pool opened years ago being in Morgan county. The Cumberland company's line from Wayne county, on the Tennessee line, extends thru Lincoln, McCreary and Whitley counties, which explains why those outlying counties of small production are running oil while Estill, Powell and Lee counties were having much trouble, and why Allen and Warren counties are badly congested.

Possible Producing Territory

With fair pipe line sevice eastern Kentucky is beginning to start active development work, particularly in Magoffin, Johnson, Lawrence, Morgan, Floyd, Menifee and adjacent territory, where West Virginia formations prevail and the crude is free from sulphur and of better quality than in central and southwestern Kentucky. Probably seventy drilling rigs are now working in Magoffin and Johnson counties and rigs are going in almost every day. In eastern Kentucky the Corniferous formation does not appear to be productive—the sulphur-content area—while the Weir and Berea Grit show oil and the Big Indian shows gas. All counties in eastern Kentucky down to Wayne county on the Tennessee line are showing oil in less or greater quantities, of the nonsulphur grade. That territory is not of gusher character, but the small wells are long-lived—it may be classified as about 30-barrel territory, with an occasional well making as high as 250 barrels and in the Cannel City pool as high as 700 barrels. The surface is very broken and rough, the big operators as a rule are shirking light-well territory, and individuals and small companies find it to their advantage in many ways, which means that it will take a long time to develop most of that part of Kentucky as conditions now exist.

Developed Production

One lease in Warren county has 1,500 barrels a day developed from three wells, while all the oil run during May was less than 2,500 barrels, which plainly shows the lack of pipe line facilities. It is not exaggerating to estimate Warren county's present developed production at 3,000 barrels a day, or more than was run from Allen county in May. With probably 150 drilling rigs active in Warren county, some idea may be had of the production possibilities there, to say nothing of Simpson and Logan counties and the still virgin part of Allen county.

If all the completed wells in Kentucky were turned loose the pipe lines would be taking at least 30,000 barrels daily instead of only about 24,000 barrels daily, and much productive territory would be opened for an increased production. Within the next ninety days there will be some improvement in pipe line facilities in southwestern Kentucky, but not as much extension as the character of the territory demands and deserves. With the possibilities of production in two or three counties in northern Tennessee now appearing, opportunity to market all the crude that could be developed during the remainder of 1920 would noticeably add to production.

With all the vociferous, raucous and stertorous propaganda emanating from government and private sources nowadays demanding more crude petroleum for immediate and insistent demands, it appears strange that so much developed oil lies dormant and so much productive territory goes begging while millions of dollars are spent in hopeless territory. It appears that for some reason, the production end of the petroleum industry is awry, grotesque, and should be put on a more normal and efficient production basis.

Of course, gusher territory is desirable and eagerly sought in preference to 30-barrel territory, but the technical and promotion propaganda now so prevalent

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fails to show the way to the gushers as certainly as the public is led to believe and, believing, extravagantly tosses its millions into the promotion hopper and enthusiastically follows the wraith-light waved by the technical, theoretical and promotion guides.

Chemical Industries Plan Sixth Exibition

NEW YORK, July 5.—The 1920 annual, which is the sixth national exposition of chemical industries, returns to the Grand Central Palace in New York, where it will be given during the week September 20 to 25, inclusive.

There are now engaged for the coming exposition 358 exhibitors, which is more than in the last exposition in Chicago. The growth of this exposition in a way indicates the growth and development of the chemical industries in America. In 1915 the first exposition was composed of 83 exhibitors, the second increasing to 188, the third to 288, the fourth to 334, and the fifth, in which the available space was much restricted and exhibitors were held to a minimum, to admit 351 exhibitors. Another floor had been added, giving four floors of the Grand Central Palace, each of which covers a whole square city block, so that exhibitors could secure increased space and not suffer the cramping felt in the last exposition.

This year the exposition will have three special sections, one the electric furnace section, another the fuel economy section, and the third a materials handling section; the two latter are new sections. The first will, as its name implies, be one of electric furnace exhibits; the fuel economy section will consist of exhibits of machinery and apparatus, furnaces, producers, stokers, and all devices for the economic utilization or more efficient combustion of fuel.

The board of directors of the Moline Oil Company, Moline, Ill., have announced the appointment of R. A. Cary as general manager of the company.

Technical Paper No. 247, "Perforated Casing and Screen Pipe in Oil Wells," by E. W. Wagy, Bureau of Mines, is available and may be obtained by addressing the director of the Bureau of Mines, Washington. This paper deals with the problem the operator has in oil fields where it is necessary to set casing thru producing oil sands that have a tendency to cave.

CHICAGO, July 1.—The C. L. Maguire Petroleum Company, Chicago, has recently opened branch offices at Pittsburgh and Washington, D. C. The Pittsburgh branch is located in the Century building, in charge of Hugh Mulholland, a man of lengthy experience in the oil business and well known in that territory. The Washington branch is located in the Munsey building, and it is being managed by Capt. MacDonald, an expert aviation engineer, who has recently been honorably discharged from government service.

The Hammond Iron Works, Warren, Pa., has been allowed by the U. S. Patent Office the registration of its trade business slogan, "The Sun Never Sets on Hammond Tanks."

Northwest Tennessee Oil Development Antedates Pennsylvania's

By H. L. Wood

IF the potentialities of the oil producing areas of Kentucky, where development work has been going on actively for several years, were only slightly to be estimated by the average oil man because of the fact that no expert oil writer had covered the state in a comprehensive way, information as to what may be expected from Tennessee was altogether hazy and incomplete.

Col. H. L. Wood, probably the best known oil writer in the country, after making a thoro survey of the various Kentucky fields by scouting over the producing counties in automobiles and on foot, extended his investigations into the adjoining state. In the accompanying article he gives the story of what he found and what he considers the possibilities to be, together with a comprehensive story of the work that has been done there and its results. This article undoubtedly will give the oil man interested in the possibilities of production in Tennessee the most valuable information to be obtained from any source.—Editor.

NASHVILLE, TENN., July 5

PRECEDING 1903, Tennessee was an oil-producing state, in Overton county, with a pipe line—abandoned in 1903 because of differences between Tennessee authorities and the operators of the line—connecting the field with Wayne county, Kentucky. Since that date no oil has been produced commercially nor any drilling of consequence been done, except four wells drilled and produced for a time near Oneida, Scott county, six years ago, and the Russell Brothers' development in the same county at Glenmary two years ago—twelve wells having been completed as producers and the oil sold, with a small quantity still in evidence.

Dating from 1866 the records of wells drilled and production actually marketed have been compiled and officially published by the U. S. Geological Survey and by the Tennessee geological bureau, and are now accepted by leading geologists and the oil trade. All the facts as compiled make a very interesting history, and within the last four years more or less prospecting and leasing has been done and is now being carried on in several counties systematically by a number of well-financed companies.

The quest for more crude petroleum is insistent, therefore the early evidences of the presence of oil in Tennessee are now considered seriously by those who are prospecting. The activity, aside from the chances of securing commercial production, seems to warrant mention in the **National Petroleum News,** and I have been at some trouble and expense to secure data that may be of help to anyone desirous of considering Tennessee's oil possibilities.

After driving thru several counties now the most active for leasing and preparations for prospect work, I am presenting in brief form a synopsis of existing conditions. As a help toward better understanding of the situation there is also presented a chart of a number of counties in southern Kentucky and northern Tennessee giving data compiled by the United States and Tennessee geological bureaus, forming a birdseye picture of the earlier development and showing that almost a hundred years ago—long before Colonel Drake completed his well near Titusville, Pa., in 1859—the section embraced in Cumberland and Wayne counties, Kentucky, and in Overton county, Tennessee, was developing crude petroleum. That that development did not continue and establish productive fields may be set down as incidental rather than as fundamental, perhaps; at any rate the efforts now being made to discover and produce crude oil in volume are worth recording, even if there is a slight readjustment of geographical alignments, due to the gradual extension of producing areas in southwestern Kentucky that is now just crossing the line into Tennessee.

Areas of Activities

Before Allen county, Kentucky, started the southwestern trend of development, C. W. Deming, of Tulsa, Okla., undertook the systematic development, by extensive leasing and subsequent prospect work, of northwest Tennessee at Dickson, embracing Dickson, Cheatham, Humphreys and Montgomery counties. This work, because of structural conditions, naturally worked toward Kentucky until more recent work in Kentucky, with plenty of oil being developed, forced greater activity southwestward into Tennessee, and the development is now meeting in Sumner and Robertson counties, Tennessee. Because of this now very active frontier development, after having scouted Allen, Warren, Simpson, Monroe and Barren counties in Kentucky, I went to Dickson, Tenn., and scouted Dickson, Cheatham, Montgomery, Robertson and Sumner counties to the first fringe of producing wells in Simpson county, Kentucky, a mile north of the Tennessee line.

After carefully investigating the producing fields in Kentucky and tracing the southwestern trend into Tennessee the possibilities of the latter state are more satisfactorily determined and encourage the belief that at least some part of northern Tennessee may reasonably be expected to produce oil in commercial volume.

The supposition might naturally follow that the work by Mr. Deming involved promotion and speculation because of the profit that might come from the sale and exploitation of oil leases. That supposition, however, is negatived by a close-up study of the system and magnitude of the work he has done during the last three and a half years at Dickson, for it involves an immense volume of detail work and heavy expense, including the employment of a number of the leading geologists of the country to work out the most desirable acreage, a large number of leasers and office people to secure, classify, record and present the acreage to investors and oil operators. It has been the largest and most carefully worked out leasing campaign probably ever undertaken in the country by an individual, embracing 1,100,000 acres, every lease having been recorded and rentals regularly paid, so that actual delivery of every tract has been possible without any hitch. Whatever profit has accrued to Mr. Deming has been fully earned, and no stock has been worked off on an unsuspecting public, every lease or block of leases having been sold on merit accompanied by reports by geologists of good repute and standing, and a number of test wells have been drilled as an evidence of good faith.

In 1910 Robert T. Hill, one of the leading geologists of the country, made an extended survey of Western Tennessee, and in 1911 M. J. Munn, of Tulsa, made another survey. Following them, Hagar, Bates & Rhodes, thru the latter member of the firm, spent some months in surveying and locating test wells. During recent months, for the Tuxbury Oil Corporation and the Bankers Petroleum Company, Dr. David T. Day and Frederick G. Clapp have been working in Dickson, Cheatham and adjoining counties, the former, with his son, being still at work around Dickson. Mr. Clapp has not yet prepared his report. Other geologists have also been employed to survey the same territory. This serious work at considerable expense is evidence of the interest that is being taken in this part of Tennessee by oil operators of means and experience.

Some Drilling Records

To test an area 17 miles north and south and some miles east and west, with two pronounced domes or structures, the Tuxbury Oil & Refining Corporation, of New York, under the personal supervision of Mr. Deming and E. O. Rhodes,

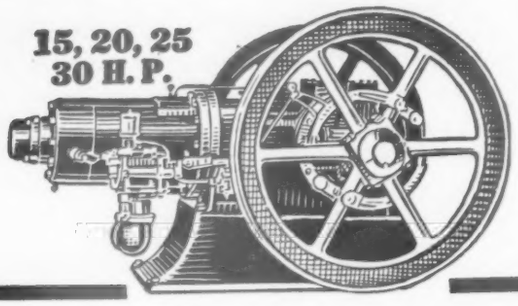

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Figure 370

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drilled a test well on the Wall farm near the Cumberland Furnace iron furnaces. This test was drilled to 1,167 feet and had oil and gas showing at 310, 378, 520, 591, 604, 714, 751, 784 and 922 feet, with the oil showings at 235, 378, 520, 714 and 784 feet. These shallow showings are in the same formations producing oil in southwestern Kentucky and dip normally to the southwest, apparently. This hole now flows artesian salt sulphur water.

On the Stark farm, near Cumberland Furnace in Dickson county, a second test was drilled to 1,166 feet that had two showings of gas and one of oil at depths corresponding with No. 1, but evidently was not as well located.

In Montgomery county two tests were drilled, one on the Jones farm, to 439 feet, and one on the Batson farm, to 545 feet, the former having a showing of gas and oil at 116 and 130 feet, the latter having no showing.

In 1866 three wells were drilled on the G. W. Brown farm, on Jones creek, seven miles east of the village of Charlotte, Dickson county, showing oil and gas at from 160 feet down to 445 feet, several hundred barrels having been hauled to Nashville, the gravity being 42 degrees. In 1877 and as late as 1902 other wells were drilled in the same neighborhood, showing oil and gas, but in no volume. The gulches appear to be too narrow to permit oil in quantity to be deposited.

Five miles west of the Tennessee river, near Hurricane Mills, in Humphreys county, the Tennessee Oil & Gas Company has a test shut down at 1,380 feet, with no showings, that will be drilled down to 3,000 feet. In the southwestern part of Humphreys county a structure ten miles north and south, along the Tennessee and Buffalo rivers and Duck creek, has been recommended for drilling, a pronounced basin appearing there formed by the valleys of the three streams. Hickman county, to the south, has also been approved by several geologists.

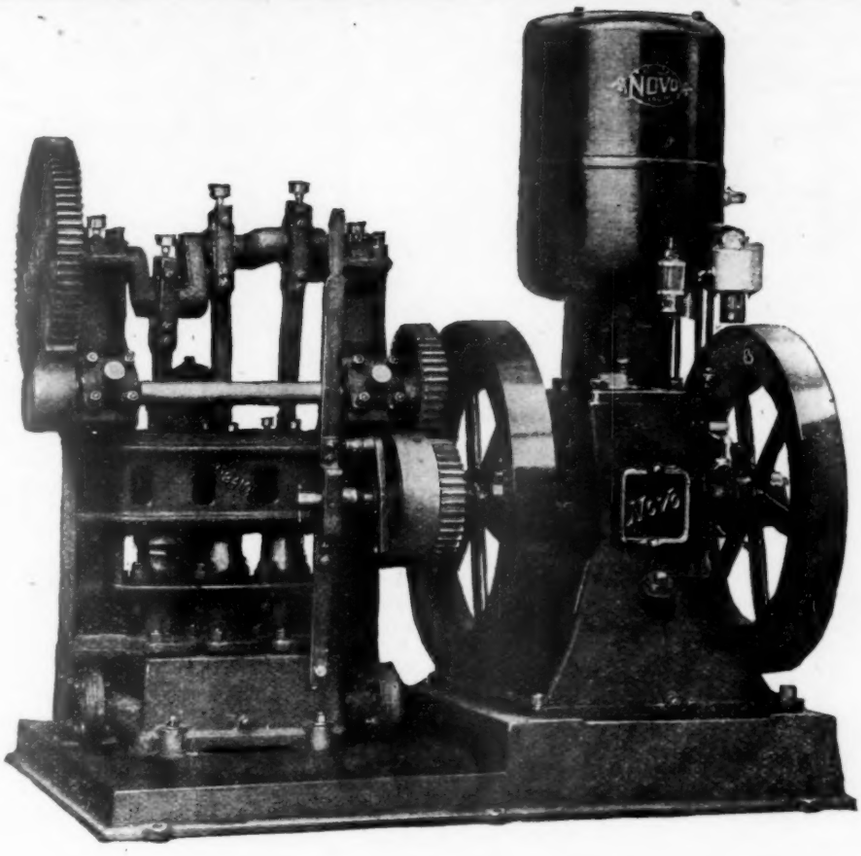
After having driven over some of this territory I am inclined to believe that some of the geologists have mistaken actual watersheds between streams for anticlines suitable for the retention of any oil that may have originated in that vicinity, the oolitic and dolomitic limestone ledges that appear along the streams and higher outcrops apparently intriguing them, as sometimes happens.

North of the Cumberland river and east of Clarksville the topography levels off and seems to offer more opportunities for the profitable production of oil, if conditions were favorable to its deposition at the time sand strata and conglomerates were being laid down. This theory may not be accepted, in part or whole, by many practicing geologists, but comparisons of many oil fields seem to indicate it.

Robertson and Sumner Counties

Coming close to the adjacent production on the Kentucky side and traversing identical levels and formations, Robertson and Sumner counties are now looking good, with indications strengthening the belief that in places at least these two counties will duplicate results in Warren, Simpson and Allen counties.

The Springfield Oil & Gas Company, of Springfield, Robertson county, has drilled one test to about 800 feet, but having a fishing job the hole was abandoned to start another test on the Taylor farm south of Springfield, some gas and oil showing, with oil now standing in the



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hole—a fairly favorable showing, with enough gas to lift the tools from the hole. The second hole, near by, is down about 700 feet and formations are regular. Neel Glenn, principal owner of the company, associated with the Wheatcrofts of Oklahoma City—formerly connected with the North American Oil & Refining Corporation—has 6,000 acres under lease and the company is making a thoro test of its acreage, which is finely located as to apparent structural conditions and levels and not far from production in Simpson county, Kentucky.

Trade papers have printed stories about a well in the northeast corner of Robertson county, near Mitchellville and Portland, describing it as a 20-barrel well in the Trenton rock at about 1,100 feet. The well is just over the line in Simpson county, Kentucky, and is 550 feet deep. The Tennessee line there juts into Kentucky a mile, which probably caused the improper location. A test is now drilling in Sumner county just north of the L. & N. station of Portland that will help solve the problem of oil in that part of Tennessee, and two tests are due—and may be completed by this time—in the edge of Sumner county just south of the Keen pool in Allen county, Kentucky. Farther west, Montgomery county, west of Robertson, is in line for an extension south from the well recently completed near Russellville, Logan county, Kentucky. There is thus presented a front of about 40 miles in three counties of northern Tennessee that should show extensions of the Kentucky production, and much of the territory has been leased.

At this time, in the Tennessee counties mentioned, down to Humphreys, 23 tests are drilling, Dickson county claiming seven of them. In Robertson county, near the Cheatham county line south of Springfield, Ira B. Stevens (formerly with the Roxana Petroleum Company) is in charge of prospect work for Porter & Wertz, of Cleveland, Ohio, having been transferred from their operations in Eastland county, Texas, which he approved for them. They have about 40,000 acres in Robertson and Cheatham counties and the first test is now drilling south of Springfield. W. P. Dykema, who resigned as casinghead gasoline demonstrator for the Bureau of Mines in March, is now living at Springfield, Tenn., has secured leases and is about to do some drilling, both in Simpson county, Kentucky, and Robertson county, Tennessee.

L. C. Glenn, geologist, Nashville, made a casual survey of Robertson and Cheatham counties for Mr. Stevens and makes a very favorable report on the territory, which the writer has read and thinks well of—if a "layman" may thus presume to pass upon the work of a professional. Fohs & Gardner have also visited and passed favorably on parts of northern Tennessee. Jenkins W. Jones, geologist of Cincinnati, covered Robertson county, Tennessee, for the Sewanee Oil & Gas Company, making a favorable report, and Wilbur A. Nelson, state geologist for Tennessee, has made many surveys for oil in the counties mentioned. Probably no territory has been more honored by so many geologists of note as that treated of in this article, and those who practice oil development exclusively by the letter and spirit of geology should not fear to prospect here.

List of Drilling Wells

Following is a list of wells now drilling in Northwest Tennessee. In Tennessee

Alone in the field

for testing the gasoline content of gas from the casing-head of oil wells, or dry gas from the gas wells. Testing outfits equipped with Curtis Compressors are compact and portable and have proven accurate to within one centimeter in one hundred of gasoline.

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there are no named townships, but the subdivisions are by numbered districts:

Robertson County—First district, Red River Development Company. Eighth district Sewanee Oil & Gas Company. Ninth district, Porter-Wertz, Cleveland, Ohio, Thirteenth district, Springfield Oil & Gas Company (Glenn-Wheatcroft interest).

Cheatham County—Sewanee Oil & Gas Company, near Thomasville.

Dickson County—Pittsburgh Oil Company, 12 miles northeast and 7 miles northwest of White Bluff. Weester et al, 2 miles north of Kingston Springs. Bankers Petroleum Company of New York, 6 miles east of Charlotte. Uncle Jeff Oil Company, 3 miles north of Craigie Hope.

Humphreys County—J. T. Anderson, Hurricane Mills. Hutchison Coal Company, of Fairmount, W. Va., at Centerville. Pritchett & Thomas, of Nashville, at Lyle. Michigan-Tennessee Oil Company, Detroit, Mich., at Bon Aqua Springs.

List of Lease Holders

Following is a list of individuals and companies that have bought oil and gas leases in northwest Tennessee counties, some of them thousands of acres:

Bartlesville, Okla.—O. A. and E. L. Kreer, George Vandell, Sivalls, the tank man; John W. Stark, M. D. Parr, E. T. Walsh, Jay W. Fierce, E. Dalton, Judge Vandeventer, R. E. Joye, J. E. Sanderson, Joe Liedecker, Nykot Oil Corporation, W. P. Dykema, F. C. Nickle, Morris Schuman, Fred A. Stubbs, Bartlesville and Denver.

Marietta, Ohio—C. D. Mann, C. Elston, J. C. Weble, W. J. Dutton, Fred Dyche, C. H. Anderson.

Independence, Kan.—M. H. Stark, W. C. Haverstick.

Hutchinson Coal Company, Fairmount, W. Va.; Wilson Oil Company, Weston, W. Va.; Charles W. McLaughlin, Buchanan, W. Va.; Wilson Oil Company, Sedan, Kan.; J. Iva Hillyard, Chicago; John Pootsey, G. C. Mathes, Keystone, W. Va.

W. M. Muddiman, A. M. Lamar, Detroit, Mich.; D. R. Fraser, Mid-Continent Oil & Gas Company, Kansas City; Frank Laurie, Frank Ames, Corry, Pa.; H. B. Julian, Toledo, Ohio; National Refining Company, Federal Oil Company, Cleveland, Ohio; W. A. Chamberlain, Olean, N. Y.; R. W. Mottaz, George E. Booth, St. Louis; H. B. Glenn, Mattoon, Ill.; Lewis & Hall, Norfolk, Va.; E. B. Hiskman, Stillwater, Okla.; John Landers, Ochelata, Okla.; A. C. Stephens, St. Louis; E. P. Hoyle, R. O'Neal, Tulsa, Okla.

A Remarkable Reconnaisance

While on the subject of geology there is here presented an abstract from a report on oil and gas in territory from north of the Ohio river south thru the states of Kentucky and Tennessee, made in 1872 by George W. Crouse, geologist, and Charles Pchwanskey, engineer. Considering the length of time that has elapsed and all the development that has followed, it is certainly a most remarkable document, and should greatly hearten the disciples of Humboldt, the progenitor of applied geology:

"From the Ohio river I find all rock formation very badly broken up and seemingly run together, giving the appearance of a general dumping-ground of debris; and I find but very little productive sand

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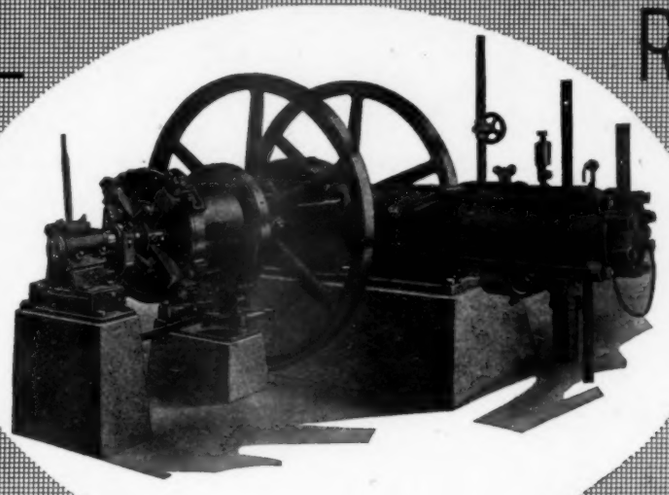

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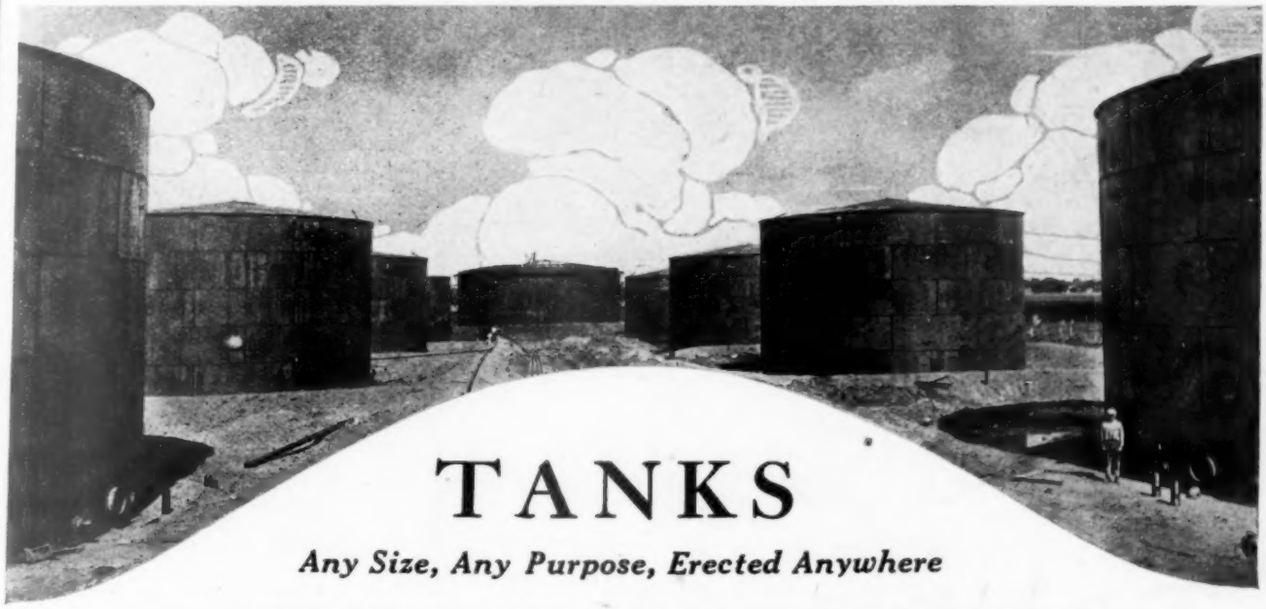

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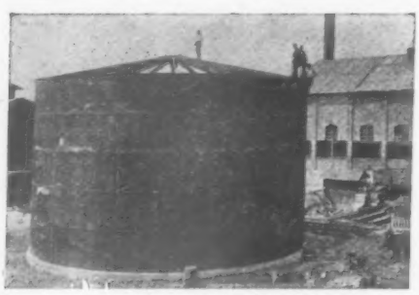

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formation for several miles. This broken-up streak of debris runs a little west of north, but may not continue very far into the interior of the state, altho there are several low depressions that probably might produce both oil and gas, but not in paying quantities, as it has the nature of very open pots and would soon exhaust.

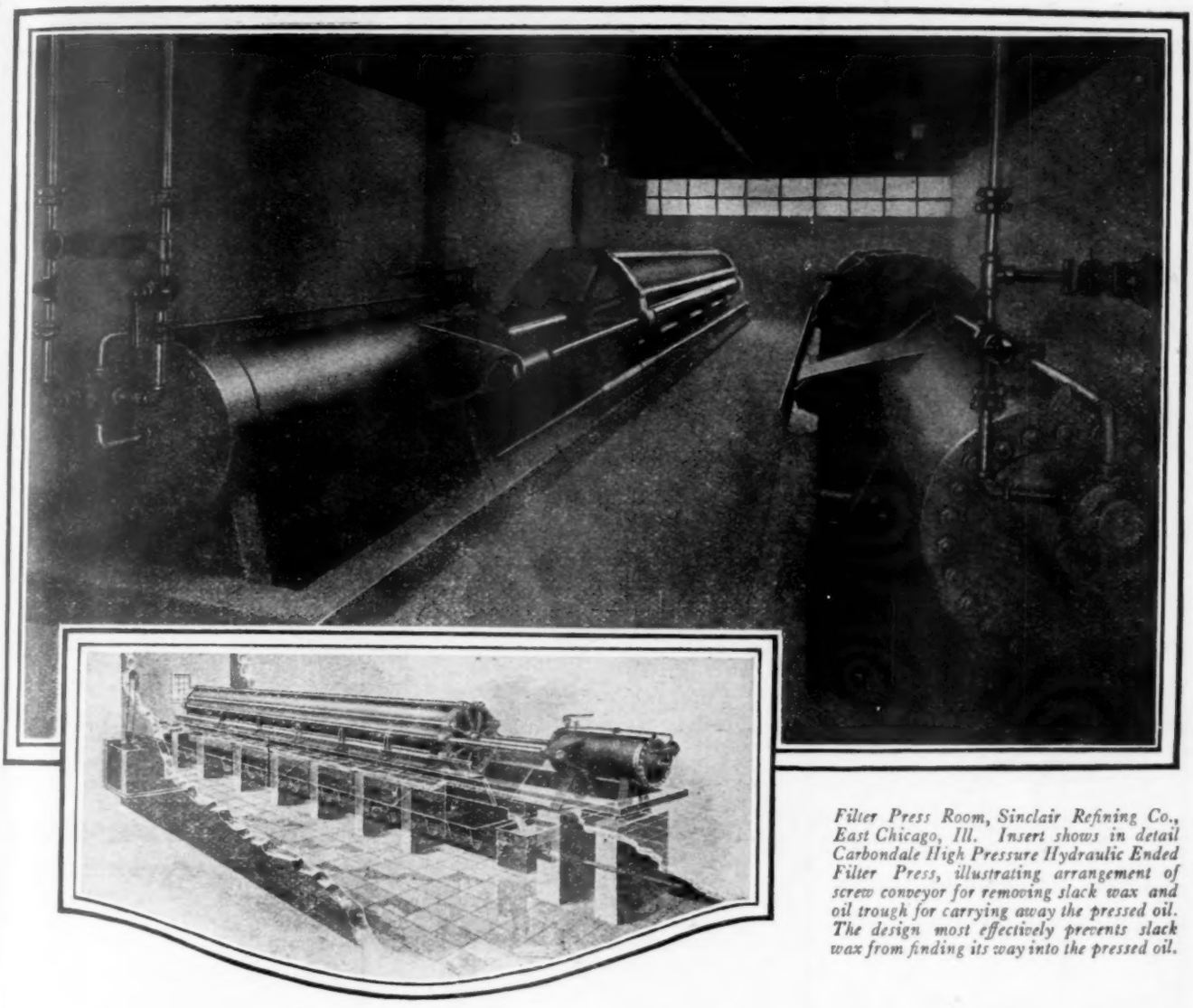
"There is one of these pockets close to the river at or near Martin's Ferry and another one that shows very distinctly a few miles north of Bellaire. About five miles from this pocket, on the original lead of 45½ degrees south of west and north of east, the formation of rock seems to have wonderfully improved, and the oil and gas bearing strata continue to near Beasville; both oil and gas will be found at several different depths, some places showing for good producers in the limestone formation. The sand-rock formation where oil is found will be of a very dark gray, with some places showing almost black.

"From Beasville there is a large depression and so scattered over a wide area that both oil and gas may be found in different localities. I find a great many flinty or hard streaks which cross this lead, but oil and gas may be found between them. There are good indications for a large pool lying between this original line and the Ohio river. Somewhere near Clarington, probably including this latter place, the original line passes about midway between Graysville and Hannibal. Here, again, I find very fine indications for a pool. This line passes near Warner and crosses the Muskingum river near Beverly and Langaville.

About ten miles northwest of Pomeroy Landing there are some of the finest oil-bearing strata to be found in southeastern Ohio. It seems to be quite a large area and the whole formation indicates a general and uniform quality. The strata of the rock are of a very porous nature and of a dark brown color and unusual thickness for this locality, showing by needle measurements to be probably 40 to 50 feet in thickness. No gas of any quantity will be found in this area; yet as we again approach the Ohio river, some miles from Hanging Rock, I find a very large area of good gas formation, and no doubt it will be at some future time shafted for. Some oil may be found very close to the Ohio river, but I cannot see any indications of a very great supply, as salt water has here played havoc with practically all strata. All indications show here that not only glaciers but subterranean upheavals have occurred thruout this section, and I would not think it very desirable territory.

"A vast amount of data could be given about this line thru this state (Ohio). To give you a minute description of the general formations from the surface to unusual depths of leads, cross-leads and water courses, slates, shales, etc., would no doubt overtax the energy of any man; and to study the different formations of strata he might become bewildered in the great maze of earth formations—it would be more a detriment to him than a help, as I give the most principal indications of strata and locations of areas that I am confident of, and it can be invariably relied upon.

"The same statement I will give you thru Kentucky and Tennessee. As this line crosses the Ohio river into Kentucky I find the same broken-up conditions, and



Filter Press Room, Sinclair Refining Co., East Chicago, Ill. Insert shows in detail Carbondale High Pressure Hydraulic Ended Filter Press, illustrating arrangement of screw conveyor for removing slack wax and oil trough for carrying away the pressed oil. The design most effectively prevents slack wax from finding its way into the pressed oil.

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it continues for several miles into the interior of the state. The surface here is very much in evidence as the lower formations will surely be found. Some distance from the small town of Quincy there is a very extensive area of rock formation that is good for both oil and gas, but salt water shows here in abundance and would probably overcome the production of oil and gas.

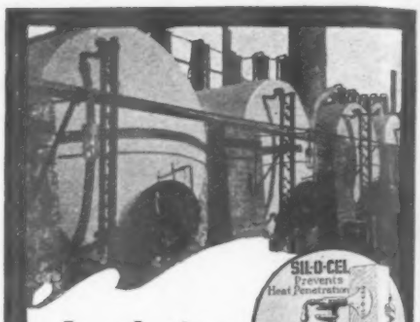
"Again, I find pots or pockets in almost a continuous chain, varying in size from a few acres to some miles in extent, and the heaviest pockets I have found are principally links or fissures in the limestone formation. You will find this state principally to be underlaid with subterranean watercourses, some attaining the magnitude of rivers. Still we have pots of good rock formation which show more or less indications of oil and gas. Near Randville we have a nice stratum of white, porous rock that will produce oil. Then close to Hillsboro I find excellent formation, and the indications are for quite an extensive area of good gas and oil producing strata. The rock formation is of no great thickness but is of good quality, and no doubt some fine production in after years will be found in this vicinity. From here to Sharpsburg, and really to Middleton, I find one of those hard waves of rock formation that has completely obliterated every sign of oil or gas.

"Southwest of this wave I find a small area of open rock formation that indicates oil and gas. This original line of 45½ degrees south of west and north of east passes between Lexington and Winchester. Between these two cities are some rock formations of porous nature, but it does not show any large quantity of oil or gas deposits, altho both may be obtained. Also here I find a quantity of sigillaris, which is the fossil plant of the coal formation. (Note—Might this by any chance be oil shale, found in that general locality:).

"Near Harrodsburg I find an extensive area of rock formation which is very open and porous, showing some fine indications for good oil shafts. The stratum is seemingly of different layers, some five or six in number, but very close together—more the nature of several blankets spread out over each other, with a thin layer of slate between them, but very good for oil. The under layer, or sixth, is very white, seemingly the nature of a sandy fireclay; and where oil is found it will be almost clear like water and will make a fine illuminant. I also here find traces of free gold in some of the mountain streams, but it is of such small quantities it would be useless to look after. From here to Horse Cave and Cave City is useless to speak of unless mining for water—then I would be very enthusiastic about it, as there is no place I have ever found in all my forty years' experience that can equal it.

"Near Glasgow Junction I find the oil-bearing strata gradually coming to a uniform appearance, covering quite a reasonable area and dipping slightly to the southwest. From here to Bowling Green and Scottsville, and practically to Adairsville—especially about nine miles from Scottsville—the indications for oil and gas are very fine, and I would advise shafting for it. All this territory is worthy of note, and in a great many places both oil and gas will be found in paying quantities.

"From near Adairsville the formation shows a remarkably quick decline and shafting would be considerably deeper to reach the oil formation than elsewhere on this line; and as we go farther in the



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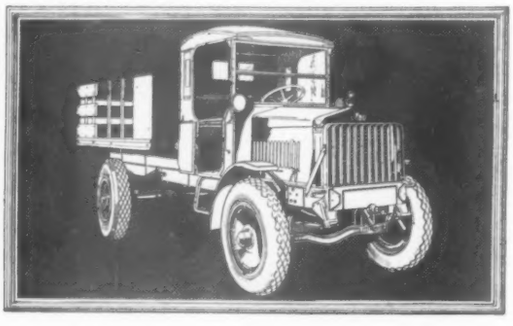

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state of Tennessee it will still keep on the decline and it will seem almost an utter impossibility to dig a shaft of such great depth.

"You can see by following closely on this line across the state of Kentucky that there is no very great inducement for any man or company to shaft for oil or gas products, as the cost will far overreach the remuneration derived from any shaft that might be driven to oil-bearing formations except the locations indicated herein.

"From Adairsville, Ky., to Cedar Hill, Tenn., there is a pretty sharp decline in all rock or shale formations, and we find here several new strata that seem to gather in thickness and of a very light gray color—and to be utilized for building purposes would make a grand, magnificent appearance. We have also iron ore in abundance, and brown hematite of the iron ore class. This is pronounced to be the very best of ores in the iron and steel industries. Also, I find very good traces of copper ore, but to what extent I would not try to give you any adequate idea as I have been employed only to get exact locations of oil and gas bearing strata and do not have the time to follow up any ore leads. But I deem it perfectly proper to give you some idea of the strata you may expect to penetrate in shafting for oil.

"There is some very good rock formation that shows excellent qualities for oil and gas that, altho very deep, would give good returns and be well worth shafting for, as this formation shows four very large areas and continues to the Cumberland river, which we cross a few miles east of Clarksville. The oil strata, or oil formation, seemingly on the south side of the river has been very hardly compressed and shows it very thin, not exceeding more than five or six feet in thickness in any locality. Limestone fissures, sinks and breaks, also water courses, show in great abundance; but where shafts are driven to the oil formations some very good producing shafts will be obtained. There seems to have been a general upheaval of the surface formation as the under strata show no disturbance whatever. Probably this may have been caused by the heavy pressure of the glaciers of some subterranean cave or chamber filled with gases that, when released, the pressure was so great that it would create quite a disturbance in this upper formation, as I cannot find any trace of earthquakes or volcanic disturbances. This formation practically continues to near Cumberland, now Cumberland Furnace.

"From this latter place we have another decided dip of all rock and shale formations, almost to the little Harpeth river, where it seems to widen to a greater area and becomes of a more porous nature and the thickness has wonderfully increased. The color is of bright white, well interspersed with pebble, and shows a decided gain in productive qualities. The lead here seems to be one-half to one mile in width and very uniform in thickness, and continues to Jones creek, about four miles north of White Bluff. From Jones creek to Spicors creek it diminishes some, but not to any great extent. Near Spicors creek I have encountered a very thick coal formation, probably eight to twelve feet in thickness, of a very fine quality. Some distance below this coal formation I find croppings of the Silurian rock formation, principally the lowest division of the Paleozoic strata, which shows for wonderful oil and gas production, but being of such enormous depths it seems beyond the ingenuity of man to contrive any

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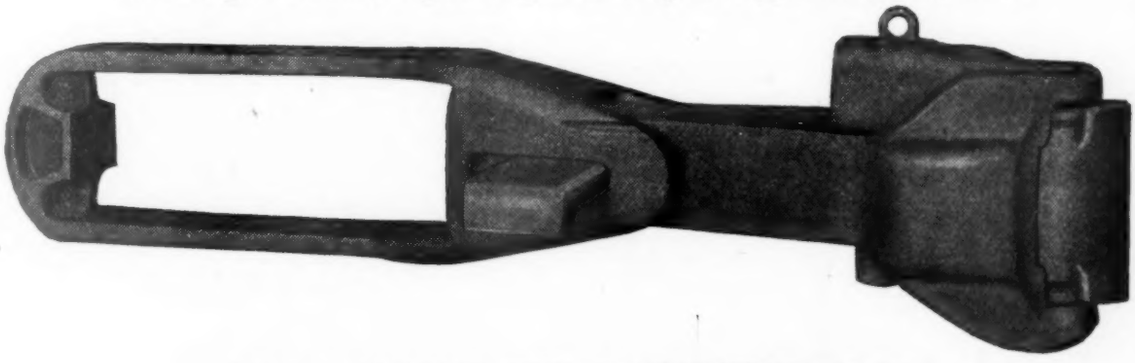

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machinery to sink a shaft to such unusual depths, equaling in some places four to five thousand feet. But here the upper rock formation seems to be practically of the same nature. From Spicors creek to the south of Parkers creek on the east and to Dickson on the west shows both strata to be practically the same; if any change, it is on the increase. This continues to Bon Aqua springs and to Waverly. All this great area seems to be about the same in all rock, slate and shale formations. The oil and gas strata are of the very finest and of the most prolific it has ever been my lot to take observation of. I probably might be too enthusiastic if I should proceed any further; but as this line terminates here I will make but few remarks.

"I would dearly like to follow this line until it would form a junction with the great western anticline—which it will somewhere in the state of Texas or the Gulf of Mexico, where the oil-bearing strata no more show seepage, but is in rivulets, and one could not sink a shaft great enough to carry away the fluid. The farther southwest we go the greater this will be found, and near the junction of the two lines this flow will be so enormous as to be beyond control. And, as the line seems so remote for any one to venture so far away from actual producing territory to sink a shaft, I think it useless to say any more in regard to this section, as it may never be developed."

(Note—Mr. Crouse, who lived in Pittsburgh, Pa., if alive today, might wonder that shafting had been abandoned for tools that drill to depths of more than 7,300 feet, and that his "rivulets" in Texas have been harnessed, and that in Mexico the rivulets have broadened into rivers—and still the search for oceans of oil goes on. His prevision in locating the oil fields of southwestern Kentucky and northwestern Tennessee, nearly fifty years ago, even in detail, must be classed as marvelous, compared with modern reconnaisances, and along the route of which I am just completing an overland journey of more than three weeks. One must travel the same route and see present-day development to fully appreciate what Mr. Crouse predicted a half century ago, when Pennsylvania constituted the producing area of the United States.)

Development Continues In Argentine Fields

Oil development in Argentina is proceeding somewhat slowly, but with no cessation of interest. The first field to be developed was the Comodoro Rivadavia, about 850 miles south of Buenos Aires, in the vicinity of the Patagonian port of the same name. The district is entirely isolated from other sections of the country except for the visits of occasional coasting vessels. The port is connected with the interior by a government-owned railroad which will eventually reach Lake Buenos Aires on the Chilean border, but which is now open for traffic only as far as Colona Sarmiento, some 200 kilometers inland. The port itself is merely an open roadstead.

In 1907, when oil was discovered, a decree was issued forbidding private exploitation within a certain radius of Comodoro Rivadavia, and development was begun by the government. By the end of 1910, however, only seven wells had been sunk, four of which

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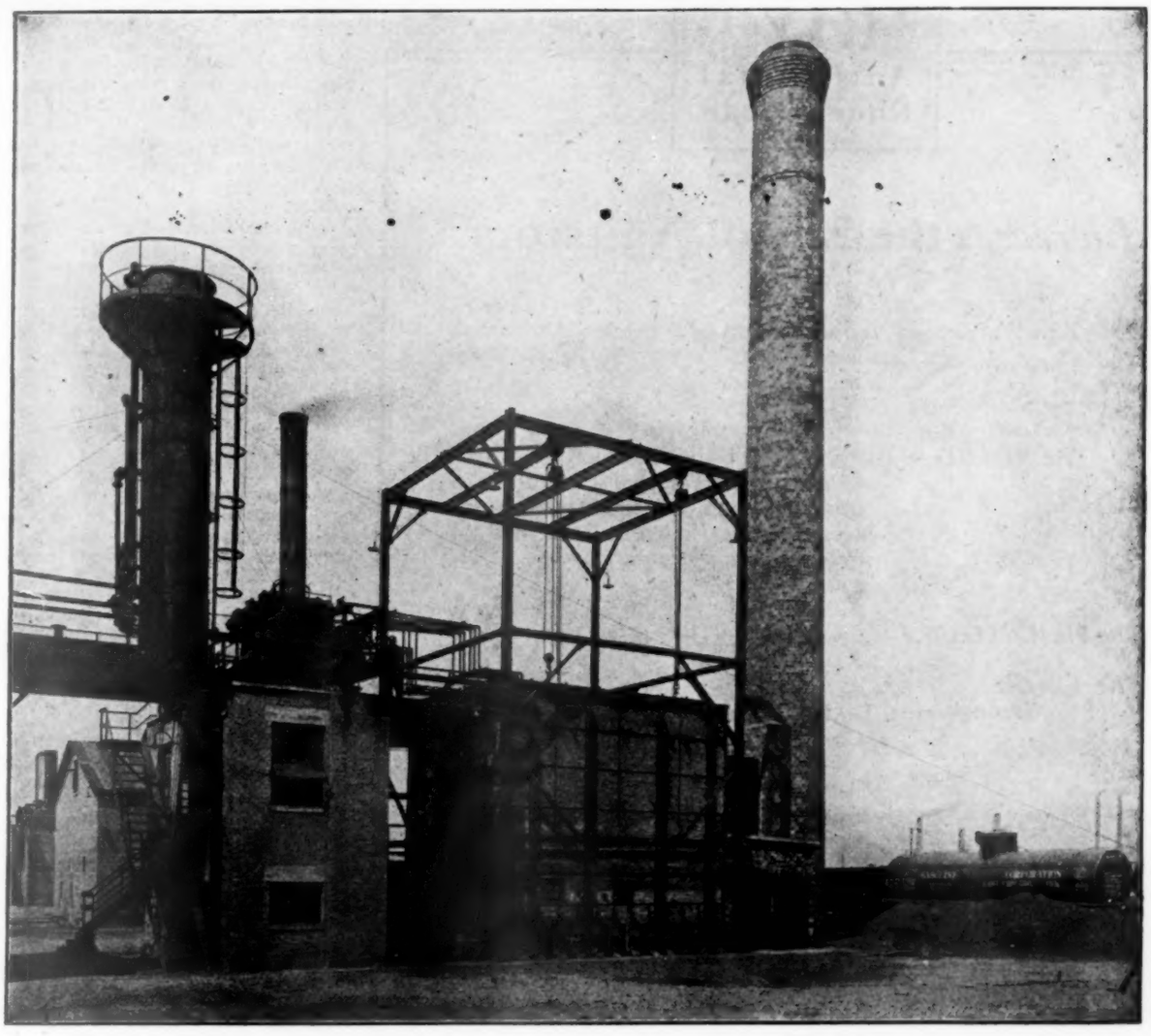

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were dry holes. In November, 1910, an area of 12,355 acres was reserved for government exploitation. By February, 1916, 25 wells had been sunk and 21 others were under way. The 25 wells were then producing about 100 barrels of oil a day, at an average depth of 1,968 feet. By July, 1917, 36 wells were in operation, and by June, 1918, producing wells numbered 40, 15 had been abandoned, and 21 were being drilled.

The operations of private companies so far may be considered to be mainly experimental. La Compania Argentine del Petroleo, with a capital stock authorized and issued of $1,293,536, later to be increased, produced 47,670 barrels of oil in 1917 and 54,348 barrels in 1918. The extraordinary high prices of 1918 made it possible for the company to declare a dividend of 20 per cent at the end of that year.

La Compania Argentina de Comodoro Rivadavia was organized in 1916 and now has several wells producing and more drilling. It expects to have a tanker service of its own at an early day, but is now paying the government $6.37 per metric ton (6.296 barrels) to transport and sell its entire product. Stock dividends of 6 and 8 per cent were declared in 1917 and 1918, respectively.

La Compania Petroleo de Comodoro Rivadavia was organized in 1911 and is capitalized at $457,000, but has been inactive owing to legal disputes.

La Compania Petroleo Argentina de Algarrabo, Sociedad Anonima, organized in 1917, has done very little exploitation. Its capital is $212,256.

Estimates based on 1918 production by the government placed the probable production of 1919 at 1,492,382 barrels. According to a message sent by the president to congress, the plans for 1919 included the erection of a refinery, the purchase of a new tank steamer, and the purchase of piping, new machinery, etc. Appropriations have been made for the purchase of this construction material, for the building of a hospital, and contributions toward the construction of a sheltered port and for surveys to be made in the reserved petroleum zone.

Oil has been discovered in three other sections of Argentina besides the Comodoro Rivadavia field, viz: The Salta Jujuy field, entirely inaccessible; the Cacheuta field, a few miles southwest of Mendoza, near the Chilean border, and the Neuquen field, where the government is planning to undertake some exploitation work during the present year.

The Comodoro Rivadavia oil is heavier that the better grades of oil produced in the United States and has heretofore been used almost entirely as fuel, altho the statement is made that it will distill readily. It has an asphalt base and a specific gravity ranging from 0.922 to 0.940 and on distillation yields 1.3 to 3.5 per cent of naptha and gasoline, 15 to 19 per cent of illuminating oils, and 77 to 85 per cent of lubricants, fuel, and coke. The oil from the three other fields is of a somewhat different quality, having a paraffine instead of an asphalt base. It is asserted that the samples from the Salta-Jujuy field show a grade equal to that of Pennsylvania or Ohio oil ,and one government analysis gives 5 per cent of light oil, 30 per cent of kerosene, and 52 per cent of lubricating oil.

Personnel Of Petroleum

By H. L. Wood

H. L. Wood

J. B. Ice of Tulsa, accompanied by Mrs. Ice, are in West Virginia, at Huntington, Charleston and other points, for summer, stopping en route at Lexington, Ky. Mr. Ice was raised in West Virginia, but has been in Oklahoma since the discovery of the Cleveland pool in 1904. For several years he has been associated as Robinson & Ice with the Fred Letcher interests as the New York Oil Company. For some time they have been operating a 1,000-barrel refinery at Okmulgee, but recently bought out the Letcher refinery interest and are only indirectly interested in production with the New York Oil Company. The Okmulgee refinery is being doubled in capacity, with plenty of Okmulgee county crude to run on, piped to the plant.

* * *

R. G. Caudle, of Coeburn, Va., has organized the Virginia-Kentucky Oil Company to develop 1,000 acres in Johnson county, Kentucky. The first well has just been completed three miles west of Paintsville and is a 25-barrel producer from the Berea Grit at 900 feet. Material is being assembled to start two more wells at once, as the 4-inch line of the Cumberland Pipe Line Company to Paintsville will permit connection if desired; but the oil will probably be shipped from Paintsville. Mr. Caudle is a graduate of the University of Texas, his father having been a pioneer in Palo Pinto county and lived there until his death several years ago. He became interested in coal and for several years conducted The Black Diamond, a coal publication, and also was connected with other publications. The Caudill family is a numerous one in Kentucky, Texas and Oklahoma, and Robert E. Caudill of Shelbyville, Ky., is operating in the Magoffin-Johnson district, having lived some years in Morgan county, Kentucky. Samuel J. Caudill of Tulsa and Pawhuska, Okla., associated with Mr. Phillips of Tulsa, is also operating in the Magoffin-Johnson district. W. J. Caudill, a Kentuckian, was prohibition enforcement officer for Oklahoma at the time of his death several years ago, and another Caudill was state senator from western Oklahoma. Kentuckians take to politics naturally and wherever they migrate to manage to take unto themselves their share of political honors. Notwithstanding the difference in spelling of names, R. G. Caudle is a cousin of the others.

* * *

S. S. Hunter, of Shreveport, La., is taking a vacation to the Colorado mountains and California, complaining of a great physical fatigue that does not lessen. Mr. Hunter has been a very active man in oil and gas ever since the first well was drilled in the Pine Island district in 1904, previous to which time northwest Louisiana had neither oil nor gas. He began to take leases and drill wells at that time and has never ceased activity since until now, and as a result he is several million dollars to the good, his latest reported sale of acreage being a big block in southern Arkansas to the Standard, altho this deal has not been officially confirmed. Some years ago Mr. Hunter disposed of acreage at Sulphur, La., adjacent to sulphur-producing acreage of the Union Sulphur Company, that netted him a nice profit. After all these years of strenuous activity and having accumulated a reasonable fortune, Mr. Hunter is clearly entitled to keep his office locked long enough to tour the world.

* * *

The campaign manager of Governor Edwards of New Jersey, presidential candidate, Walker W. Vick, has had a varied experience in mining, oil, foreign transportation and commercial exploitation. Recently he has been in New York as manager of a commercial organization dealing in South American products. Before the Indian Territory oil fields were discovered Mr. Vick was in California as the representative of New York people who had mining interests, also in Canada —the Douglas-Lacey Company. This company acquired some Osage reservation acreage in 1902 and organized several subsidiary companies. Mr. Vick visited that section and superintended the drilling of several wells. The Douglas-Lacey Company was badly managed and its Osage experiment caused its downfall, after which Mr. Vick became active in other lines. With all deference to his business ability, Mr. Vick has located another dry hole that is wet.

* * *

A. Fleming, who lived in Texas many years, at Fort Worth and elsewhere, is now operating in Floyd county, eastern Kentucky, Prestonburg headquarters, having secured several thousand acres of well-selected acreage and moved in a firstclass drilling rig. He has visited many parts of the United States to study mineral conditions and is an exceedingly well-posted man along practical geological lines and the commercial values and importance of many mineral deposits. Mr. Fleming has operated for oil in Oklahoma, Texas, Wyoming and other western states, but thinks extremely well of eastern Kentucky. He is just completing a deep test in Floyd county, drilling thru the corniferous formation at 2,384 feet, with just a little gas in the hundred feet encountered. All thru eastern Kentucky the corniferous is found under the Big Indian, Weir and Berea formations, and has been found in West Virginia below 3,000 feet and unproductive.

* * *

The election of A. W. Hurley, of Pawhuska, as an active vice president of the First National Bank of Tulsa, recalls early acquaintance, dating from 1903, when he was chief clerk at the Pawhuska agency of the Osage reservation. Mr. Hurley moved from Bentonville, Ark., where he conducted a weekly paper, to the Osage Indian reservation in 1893, serving many years at the agency until, with associates he reorganized a Pawhuska bank in 1909. Since that time Mr. Hurley's success has been continuous and he is now quite a financier, being interested in oil, gas and other Oklahoma industrial affairs. He will move to Tulsa and be one of the active managers of the Tulsa bank, which has had a rapid expansion in recent years.

* * *

A. H. Freeman, of Tulsa, has been working out of Paintsville, Johnson county, Kentucky, as a shooter for the Cumberland Torpedo Company, but will return to Tulsa about the middle of July. Shooting oil wells in Kentucky, like other oil operations, is attended with considerable more hardship than in the Mid-Continent fields, even when accompanied by an assistant who hauls the explosive from the factory or magazine to the well, as long rides horseback are necessary and delays in transit are frequent. The open-face work on western prairies is more appealing. Mr. Freeman worked for the Eastern Torpedo Company in Oklahoma.

* * *

A very capable young woman in the oil business is Miss Lila Darnell, of Lexington, Ky., who has charge of the office work for E. E. Loomis, secretary of the Kentucky Oil Men's Association, with 300 members and a branch—the Eastern Kentucky Oil Men's Association—at Paintsville, Johnson county, of which David Browning of Paintsville is president. Miss Darnell keeps all records, including the official monthly reports made up at Frankfort by the state tax commissioner, entertains visiting members and otherwise comports herself so industriously that Secretary Loomis almost has a snap.

* * *

W. R. Hamilton, C. J. Peterson, and J. L. Craig, of Tulsa, are working in eastern Kentucky, representing the Oil Issues Company of Tulsa—a merger of the Pomeroy & Hamilton interests. They have also been in central and southwestern Kentucky, Tennessee and Alabama, acquiring leases in places. Riding horseback is an old industry in Oklahoma, Texas, and the west, in connection with the cow business, but it is a new thing to see Oklahoma oil men doing all their traveling in Kentucky via saddle horses; and it may be said

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WHEN our customers continue to place their orders for steel barrels with us year after year, —many of them since back in 1911—it is only natural to believe they are satisfied with the barrel itself, the price and the service rendered by the manufacturer.

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Wayne Curb Pumps give you better profits because they are so well made that they last longer, serve better, and are *always on the job* at the curb, for you and your trade. *Write for Bulletins 280NP and 11NP.*

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For Air and Water at the Curb

in passing that it is not quite as luxurious as hotel lobbies.

* * *

The last heard from Tom W. Mason was at Breckenridge, Texas, where he bacomes district foreman for The Texas Company. When the shallow-sand field was opened at Chelsea, Indian Territory, in 1902, Tom was gauger for the Prairie Oil & Gas Company, running the oil for the Cherokee Oil & Gas Company, owner of the "big lease," and acted as district foreman, for he was so far from home he had to do about everything. He went with The Texas Company about as soon as its pipe line system was completed to Oklahoma, working out of the Tulsa office.

* * *

W. H. Hoffman of Syracuse, N. Y., associated with young Mr. Courson, was in Kentucky last week to secure some leases in Magoffin county and central Kentucky for immediate development. This firm is now more active than for several years, in Kansas, Oklahoma, Kentucky, and other fields. Mr. Hoffman, who is president of the Drake Memorial Association, is in better shape physically than for some years and is hustling in his old-time form, while Mr. Courson looks after the field work in the eastern fields.

* * *

Victor Martin and Charles Jackson, who have been making Fort Worth headquarters since the north Texas excitement started, are now working out of Bowling Green, Ky., where they have secured desirable acreage and are drilling. Victor was raised just across the Ohio river at Gallipolis, Ohio, so should feel at home in Kentucky. For ten years he was in charge of office work for W. S. Mowris in Oklahoma and Kansas, Bartlesville and Tulsa headquarters, but for the last six years he has been operating on his own power.

* * *

John G. White, the well-known operator of Lexington, Ky., is becoming heavily interested in northeastern Kentucky, having acquired several thousand acres of leases and completed a number of gas wells in the gas belt that extends thru Lawrence, Johnson, and Magoffin counties. He is frequently seen at Paintsville and adjacent towns.

* * *

L. C. Patterson, of Butler, Pa., is operating in eastern Kentucky as the L. C. Patterson Oil & Gas Company. Having operated thru Pennsylvania, West Virginia and southeastern Ohio, the similar formations and oil in that part of Kentucky appeal to him, as they do to many other eastern operators.

* * *

Isador Scobel, formerly postmaster at Erie, Pa., is interested in the Johnson-Magoffin district in eastern Kentucky, and has worked over the structures there quite extensively. He is now starting drilling operations there associated with Paintsville people.

SHREVEPORT, LA., July 5.—T. A. Tooey, receiver for the Texlahoma Oil Company, said that the question of reorganizing the company is being considered, but it will take some weeks yet fully to develop the plans. Meanwhile, the Texlahoma properties are being operated, Receiver Tooey said.

OIL CREEK REFINING CO

TITUSVILLE, PA.

Refiners and Marketers of Petroleum and Its Products

GASOLINE	CYLINDER STOCKS
NAPHTHA	VISCOUS AND NON-VISCOUS NEUTRALS
KEROSENE	
GAS AND FUEL OIL	WHITE CRUDE SCALE WAX

Oil of quality, refined
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Concerning the character or
Reliability of our products.
Every order given us
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Keep these facts before you.

Pennsylvania Crude Used Exclusively

April Statistics Show Increase In Consumption Exceeds Production

An increase in daily domestic consumption of gasoline of 33 per cent for the first four months, as against the same period of 1919, with gasoline production, on the same basis of comparison, increased 15½ per cent, is shown by Bureau of Mines statistics compiled by H. F. Mason, petroleum economist.

The increase in consumption averaged 2,146,720 gallons daily and the gain in production was at the rate of 1,595,890 gallons daily, or consumption increased 790,050 gallons daily more than production.

While an increase in stocks of 47,750,474 gallons at the end of April, 1920, as against the same date of 1919, is shown, an increase of 8½ per cent, and while the increase in stocks at the end of April, against the last day of March, 1920, is 17,157,426, some account of the increase may be found in the conditions which prevailed during April, when transportation conditions were such that gasoline run to storage by the refiners was on the increase. In this period, stocks held by jobbers were drawn upon heavily and could not be replenished, thus a large quantity which normally would have been in jobbers storage and would not have been recorded, was in refiners storage and recorded as a gain.

Imports of gasoline, chiefly from Mexican skimming plants, for the first four months of 1920, were the largest on record and showed an approximate increase of 100 per cent over the same period of 1918, but still constituted less than 1 per cent of the total gasoline production. Exports during the first four months of 1920 have gained by 246,802 gallons daily, which, however, is less by 142,852 gallons daily than the same period of 1918. Shipments to our insular possessions, Alaska, Hawaii, Porto Rico and the Philippines, during the first four months of 1920 were approximately 37,000 gallons a day. During the same period in 1919 they were 43,980 gallons a day, but in 1918 were practically the same as in 1920.

Kerosene stocks at the end of April were 100,001,286 gallons more than at the end of April, 1919, and were greater by 41,741,006 gallons than at the end of March, 1920, this latter reflecting the general weakness of kerosene during the past several months. As in March, the greatest amount of kerosene in storage in any particular district at the end of April was found in Texas and Louisiana.

Fuel and gas oil stocks, however, revealed a loss of 217,208,489 gallons at the end of April, 1920, as against the same date of 1919, but gained 10,505,151 gallons over the amount in storage at the end of March, 1920.

The gasoline situation summarized for the past four years, is as follows:

First Four Months of Years 1917, 1918, 1919 and 1920

Year	Production (Gallons)	Daily Average Domestic Consumption (Gallons)	Stocks at End of April (Gallons)	Equivalent Days Production
1917	6,923,058	.....	.....	..
1918	8,594,882	6,411,452	509,197,134	60
1919	10,068,953	6,442,992	593,616,170	59
1920	11,421,843	8,591,912	643,552,644	56

Imports and Exports

Year	Imports (Gallons)	Daily Average Exports (Gallons)	Shipment to Insular Possessions (Gallons)
1917	22,745	993,034	37,579
1918	63,356	1,407,667	37,960
1919	49,991	1,018,013	43,980
1920	98,653	1,264,815	37,659

NEW YORK, July 2.—The increasing needs of the Standard's office requirements has resulted in the leasing of one of the floors in the seventeen-story building in course of erection, adjoining the Pennsylvania terminal, Seventh avenue, between Thirtieth and Thirty-first streets. The new quarters will be occupied by the New York company.

The distribution of petroleum, fuel, and lubricating oils is receiving the attention of French capitalists. Two companies recently floated by local bankers of La Rochelle for operation in that district are the Societe pour l'importation des Huiles Combustibles, capital 5,000,000 francs, and the Societe de Fabrication de la Vaseline, capital 1,400,000 francs. Other late incorporations of companies to deal in oils and their capitalization are: Societe Francaise Ratocczyn (gasoline, heavy oils, carburents, etc.), 23,000,000 francs; Societe Pax, (essential oils and other chemical products), 1,000,000 francs; Societe pour l'Approvisionnement des Consommateurs d'Huiles Combustibles, 2,500,000 francs; Societe la Petroleenne, 22,000,000 francs.

Stocks on Hand at Refineries at Close of Each Month

	Crude Oil Bbls.	Re-run Bbls.	Gasoline Gals.	Kerosene Gals.	Gas & Fuel Gals.	Lubricating Gals.	Wax Pounds	Coke Tons	Asphaltum Tons	Misc. Gals.
1918										
Apr. 30..	12,600,062	954,205	509,197,134	393,527,476	471,644,479	144,383,212	151,228,317	13,109	101,338	248,260,551
May 31..	11,824,633	872,300	460,637,479	347,311,945	515,020,224	161,009,729	168,178,328	15,583	104,214	317,115,697
June 30.	11,956,151	932,561	418,440,353	426,285,676	550,704,759	158,316,257	169,424,428	17,478	97,631	273,877,024
July 31..	14,026,525	1,548,971	349,928,604	432,807,129	519,012,839	136,460,207	176,539,564	17,943	92,597	450,086,589
Aug. 31..	13,946,595	1,082,892	285,446,538	424,281,481	569,016,413	137,496,986	176,197,680	19,912	88,446	459,891,496
Sept. 30.	14,461,100	1,312,275	269,772,723	436,628,907	583,407,769	147,425,556	181,044,508	16,866	79,424	444,353,139
Oct. 31..	15,438,756	1,308,744	250,328,329	419,409,944	596,116,351	135,196,542	195,797,590	23,905	74,159	457,222,127
Nov. 30.	15,222,401	1,373,740	270,072,011	397,804,012	583,777,918	132,923,478	190,953,158	22,005	74,955	466,887,345
Dec. 31.	15,749,771	1,300,018	297,326,983	380,117,829	659,001,357	138,853,574	199,657,542	22,605	76,858	477,783,740
1919										
Jan. 31..	15,380,185	1,088,264	383,212,692	332,393,181	646,411,414	158,370,431	189,064,329	28,732	93,027	483,942,833
Feb. 28..	14,820,601	1,176,483	458,449,187	303,062,436	692,816,000	152,297,163	209,908,707	33,716	102,547	500,413,825
Mar. 31.	15,106,361	1,121,963	546,062,429	294,677,623	749,067,806	165,495,254	235,588,922	37,642	113,949	468,035,524
April 30.	15,184,844	980,597	593,616,170	276,356,837	807,895,498	170,122,088	249,351,315	45,601	118,863	480,607,249
May 31..	16,372,314	781,644	594,035,688	244,635,631	788,740,572	173,754,109	260,137,244	41,677	121,524	485,574,251
June 30.	16,775,723	1,270,470	593,896,610	252,542,434	811,790,637	175,384,775	254,705,414	43,407	108,384	452,475,704
July 31 .	15,304,915	1,034,976	514,919,358	279,855,061	817,809,519	173,884,303	255,207,227	40,194	98,372	479,127,372
Aug. 31..	15,131,549	932,648	434,531,446	296,065,646	830,329,785	170,572,819	256,133,738	43,615	97,276	494,859,576
Sept. 30.	13,925,441	1,173,799	371,125,419	311,843,057	862,135,385	158,967,070	252,407,708	39,853	81,324	460,332,669
Oct 31..	14,091,945	1,143,690	354,160,071	329,160,795	828,574,452	152,536,736	257,548,072	34,829	76,409	438,848,970
Nov. 30.	13,983,716	1,113,581	378,133,185	347,070,560	791,052,991	149,193,143	239,710,946	31,933	82,304	435,315,076
Dec. 31.	13,143,285	1,141,384	446,793,431	339,319,690	714,124,455	137,318,934	212,461,594	21,146	73,449	401,883,474
1920										
Jan. 31..	13,200,727	966,503	515,934,364	327,548,646	652,080,901	141,690,177	203,662,032	21,236	72,036	391,033.357
Feb. 29..	13,500,599	863,220	562,996,489	330,120,942	590,322,125	132,759,244	197,996,501	21,709	70,067	405,588,469
Mar. 31.	14,346,458	806,479	626,393,046	334,617,117	580,182,858	130,630,597	168,030,018	17,542	87,720	428,749,660
April 30.	15,145,691	758,938	643,552,644	376,358,123	590,687,009	140,355,972	188,170,912	19,694	78,273	487,932,157

Bureau of Mines Statistics on Refinery Production

Output of Refineries in the United States for January-April, 1920, and total output for 1918 and 1919, shown by Districts as compiled by the United States Bureau of Mines

1918-19-20	East Coast (N. Y., Phila. and Balto.)	Pa., N. Y., E. Ohio and W. Va.	W. Ohio, Ind., Ill., Ky. and Tenn.	Oklahoma and Kansas	Texas and Louisiana	Colorado and Wyoming	California	Total
Crude Run (bbl.) All 1919	74,869,891	20,483,273	29,598,216	61,991,730	88,943,946	12,700,045	72,933,052	361,520,157
Total, 1918	64,119,528	18,804,510	22,184,148	60,805,183	81,733,167	11,913,125	66,454,969	326,024,633
Jan., 1920	6,213,541	1,595,948	3,047,234	5,243,926	7,912,352	1,057,947	5,744,212	30,815,160
Feb., 1920	5,635,110	1,455,748	3,073,566	5,117,170	7,526,774	1,167,511	5,232,844	29,208,723
Mar., 1920	6,672,610	1,665,225	3,077,308	5,455,185	9,164,122	1,278,171	6,279,383	33,592,004
April, 1920	7,000,083	1,826,730	2,903,601	5,125,573	8,868,206	1,269,654	5,858,193	32,852,040
Re-run (bbl.) All 1919	6,509,424	2,156,615	9,607,374	6,087,548	5,928,807	7,351,062	8,121,786	45,762,619
Total, 1918	7,330,083	1,992,336	7,987,413	9,378,896	5,579,957	4,627,512	13,669,007	50,565,204
Jan., 1920	554,619	172,923	455,815	221,012	791,586	446,497	455,895	3,098,347
Feb., 1920	577,922	192,800	548,695	237,149	731,806	519,725	496,977	3,301,074
Mar., 1920	441,431	169,222	481,518	137,606	1,011,007	543,154	398,903	3,182,841
April, 1920	295,116	153,549	438,289	182,392	819,031	467,835	473,161	2,829,373
Gasoline (gals.) All 1919	779,698,016	270,113,740	571,477,670	880,724,011	800,336,848	237,713,872	417,792,940	3,957,857,097
Total, 1918	718,720,111	241,639,462	460,795,843	865,799,574	636,856,670	212,108,809	434,392,494	3,570,312,963
Jan., 1920	68,150,484	20,726,835	47,145,043	73,333,033	75,892,317	18,483,424	32,988,021	336,719,157
Feb., 1920	57,902,258	20,025,695	49,678,529	69,871,578	78,810,531	21,943,163	34,356,943	322,588,697
Mar., 1920	71,056,252	23,371,100	52,873,344	70,991,944	87,323,078	23,059,164	38,452,796	367,137,678
April, 1920	67,018,514	24,411,967	47,903,279	69,921,723	85,976,617	22,081,626	38,283,725	355,597,451
Kerosene (gals.) All 1919	703,112,919	190,623,584	216,704,665	392,879,976	568,857,274	65,691,295	203,662,431	2,341,632,164
Total, 1918	485,559,229	136,951,334	187,070,255	415,222,396	435,281,246	62,695,223	102,580,454	1,825,360,137
Jan., 1920	47,668,220	14,254,004	17,271,401	33,645,516	61,356,398	5,211,809	16,599,044	195,956,392
Feb., 1920	43,000,961	13,672,905	19,281,032	31,927,660	62,307,637	8,406,504	15,926,635	194,523,334
Mar., 1920	40,885,918	13,660,120	16,428,059	33,731,543	58,075,184	8,884,332	19,445,019	191,110,175
April, 1920	45,583,384	15,150,341	14,164,704	31,519,932	52,274,512	8,254,420	17,521,724	184,468,017
Fuel, Gas Oil (gals.) All 1919	1,226,192,099	169,282,410	048,241,614	1,259,048,928	1,912,281,972	279,701,842	2,300,539,701	7,627,288,566
Total, 1918	1,118,998,731	201,775,157	344,497,236	1,344,145,229	1,934,441,119	243,755,929	2,133,784,156	7,321,397,557
Jan., 1920	112,467,484	16,214,536	45,313,662	98,611,075	153,041,518	15,994,092	175,912,789	617,555,156
Feb., 1920	107,359,882	14,741,766	45,537,768	99,054,781	150,788,588	15,829,062	156,373,010	589,684,857
Mar., 1920	129,590,303	14,522,592	42,147,085	102,962,619	199,237,875	16,054,239	182,431,250	686,945,963
April, 1920	131,480,674	17,042,492	44,069,583	93,157,122	169,862,504	15,744,288	171,732,122	643,088,785
Lubricants (gals.) All 1919	280,224,126	180,985,515	102,022,709	93,207,776	121,223,387	3,481,554	65,614,950	846,760,017
Total, 1918	257,412,655	182,864,252	97,460,092	109,876,505	123,258,451	3,653,559	66,940,253	841,465,767
Jan., 1920	25,356,041	14,844,405	7,156,526	5,637,684	15,286,740	1,012,572	6,584,667	75,878,653
Feb., 1920	24,107,178	13,172,882	8,314,527	6,902,424	13,131,049	1,284,951	7,318,289	74,243,073
Mar., 1920	27,370,520	15,265,882	8,471,151	8,331,226	14,488,579	928,137	6,963,478	81,818,973
April, 1920	29,615,342	15,891,548	7,497,975	9,615,501	14,951,749	1,072,144	6,923,805	85,568,064
Wax (lb.) All 1919	186,791,005	87,703,238	69,399,635	43,782,952	74,439,594	3,070,741	2,028,058	467,235,223
Total, 1918	215,791,443	86,432,928	78,020,865	48,726,352	73,145,391	2,259,346	768,032	505,144,357
Jan., 1920	17,403,142	7,180,534	4,661,652	2,731,154	6,986,045	726,378	319,651	40,008,556
Feb., 1920	16,230,689	6,890,462	5,206,405	2,902,426	7,098,172	1,284,951	208,651	39,821,756
Mar., 1920	19,592,901	7,224,459	5,586,620	3,720,601	6,510,142	2,049,504	201,894	44,886,121
April, 1920	17,621,648	8,428,338	4,427,352	5,350,309	5,036,851	2,137,610	351,285	43,353,393
Coke (ton) All 1919	248,945	18,157	137,065	56,843	122,268	20,181	.....	603,459
Total, 1918	222,644	19,758	137,759	56,659	107,931	14,912	.....	559,663
Jan., 1920	12,750	1,376	9,988	3,026	10,821	566	.....	38,527
Feb., 1920	13,784	1,682	10,589	2,061	8,647	1,045	.....	37,808
Mar., 1920	16,989	1,320	10,219	3,009	11,783	1,046	.....	44,366
April, 1920	17,030	1,580	9,287	2,783	9,387	525	.....	40,592
Asphalt (ton) All 1919	430,135	2,115	91,309	172	210,532	20	167,602	901,885
Total, 1918	270,172	2,900	71,942	10,434	145,887	40	106,593	607,968
Jan., 1920	28,470	409	6,650	.....	23,718	.....	13,885	73,132
Feb., 1920	29,743	236	7,219	.....	19,497	.....	14,025	70,720
Mar., 1920	36,558	464	7,114	.....	33,996	.....	19,568	97,700
April, 1920	32,525	561	6,306	.....	30,760	.....	16,790	86,942
Misc. (gals.) All 1919	75,678,218	65,115,629	147,537,937	98,214,085	365,163,867	219,311,185	306,842,859	1,278,863,780
Total, 1918	78,617,550	36,308,371	43,476,748	68,125,328	352,028,239	136,475,995	571,678,155	1,286,710,383
Jan., 1920	5,313,442	2,475,460	15,360,649	8,177,578	40,596,881	18,983,655	19,196,467	110,104,132
Feb., 1920	6,511,173	2,076,704	15,134,348	8,443,235	34,036,122	19,381,503	18,372,062	103,955,147
Mar., 1920	3,867,921	4,484,614	16,129,842	9,304,175	43,800,443	23,732,645	23,467,775	124,787,415
April, 1920	4,318,770	3,984,383	14,087,369	7,505,936	57,712,353	21,011,578	21,894,551	130,514,940
Loss (bbls.) All 1919	4,137,640	1,363,835	2,325,185	2,727,227	3,043,689	716,819	1,700,831	16,015,226
Total, 1918	3,631,988	1,187,926	1,890,377	2,525,447	3,019,166	732,931	1,568,790	14,566,625
Jan., 1920	318,614	101,120	214,661	198,497	233,931	76,965	143,934	1,287,722
Feb., 1920	234,456	100,652	218,075	174,286	235,470	84,092	119,473	1,166,504
Mar., 1920	266,243	101,806	193,469	181,627	298,482	77,984	121,398	1,241,009
April, 1920	343,860	116,519	190,551	227,283	381,566	103,334	132,937	1,496,050

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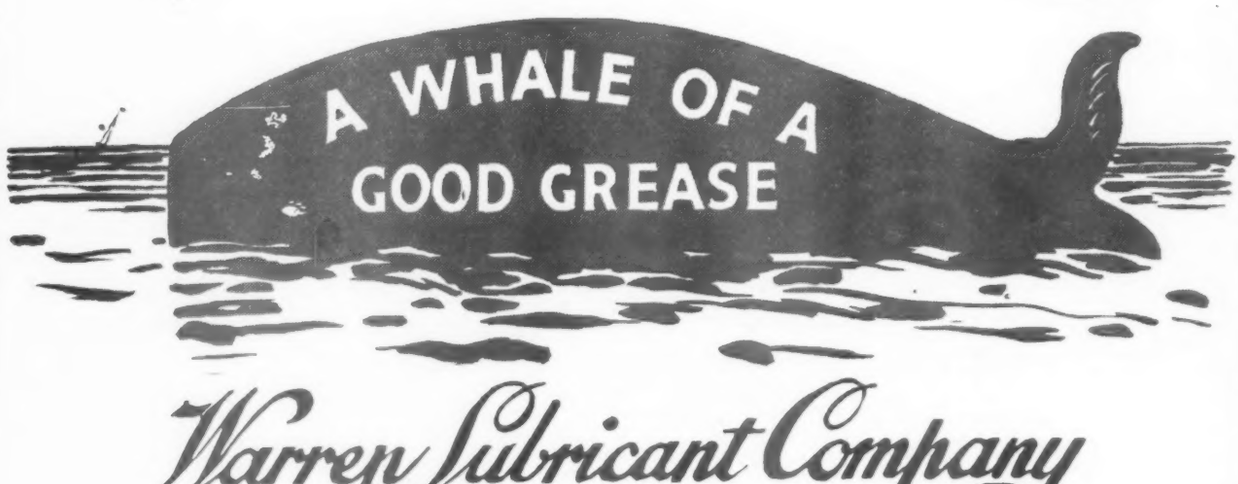

Warren Lubricant Company INC.

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LUBRICATING *and* INDUSTRIAL OIL ENGINEERING

by John Rome Battle

(J. R. Battle Company, Engineers, Philadelphia)
Associate Member American Society Mechanical Engineers
Editor of Lubrication and Industrial Oil Engineering Department

IN the accompanying article, the seventh of a series on lubricating greases, their manufacture and use, Mr. Battle discusses some points pertaining to the standardization and manufacture of grease lubricants which should be considered by the progressive grease manufacturer in the development of his policies and product.

The standardization of greases, as a distinctive classification of lubricants rather than a miscellaneous series of products, greatly varying in physical characteristics and lubricating value, would undoubtedly be a great help to the introduction of grease lubrication to many fields, in which little has been done with it.—Editor.

Entrance Of Greases Into New Fields Brings Need Of Standardization Plans

Article 7

THAT grease has its place as a lubricant in the vast field of industrial lubrication, is undoubtedly true. That it is not a universal "cure-all" for every kind of lubrication from air-compressors to textile spindles is also true, notwithstanding the broad claims made by many grease salesmen as to the merits of the grease products that they sell. Only a careful study and broad experience, resulting from actual test results, will demonstrate the many types of bearings and equipment which are favorable to grease lubrication. It would seem that, if the various grease manufacturers will combine in an association, especially designed to study the whole subject of grease lubricants, including standardization of such factors as consistency, melting point, etc., as well as the question of bearing design favorable to grease and those requirements of the equipment found in the various industries which can be met with grease to the satisfaction of the operating men, the result of such combined investigation applied to the manufacture, selling and advertising of grease products will certainly reflect to the mutual benefit of all members of such an organization. Even those who are not members would at least necessarily improve their products and selling methods, to the general benefit of the entire grease industry.

The problem for the grease manufacturer who takes pride in his product and who is striving to build up a steady demand for his grease is divided into several basic divisions:

(a) His first and most important task is to make grease that is uniform in consistency and composition. This is a very common objection to many greases that seems to be found by the consumer, both in the operating field and by the designing engineer. This question has been raised by ball-bearing manufacturers and others who are never sure of the kind of grease lubricants their equipment will be lubricated with, if they provide for grease lubrication, and ship their machinery to some part of the country not reached by the grease manufacturer with whom they have been dealing.

The question of uniformity, for consistency and composition, is in the first place dependent upon the development and standardization of suitable equipment for checking the product at its source of manufacture, combined with organized inspection.

Use of Key Symbols

It is unquestionably a mistake to grade consistency of grease according to some arbitrary key or symbol label, as is the practice of some manufacturers, probably with the object of throwing off the competitors' salesmen as to the grade of grease sold to the various users. Such a system does not throw off the competitor, because it is only a question of time before he has secured a comparative list of these products and the equivalent grades of his own product, for the use of his salesmen. But such a system of marking does throw off the buyer and tends towards confusion.

Grease should be labeled with a standardized consistency number. In this connection it is only a question of time before the up-to-date marketer of lubricating oils will include in his brand name for these oils a number which will signify the viscosity and type of the oil offered. High prices have done a lot to educate the buyer of lubricants and many are already seeking more information regarding the oils they buy. One oil company, which markets very extensively, have adopted a good plan for branding their oils, which, for illustration, is given as follows: A brand, which we will call "Watol," is given to all of their non-emulsifying oils, the viscosity of the oil at 100 degrees Fahr. Saybolt is next given, and the barrels are kept stenciled with this marking on them in the warehouse. When the call is for, say, turbine oil, the words "Turbine Oil" are added to the brand. Thus they have Watol 145 Turbine Oil, or Watol 275 Turbine Oil, or Watol 175 Dynamo Oil. This system provides an easy method of avoiding mistakes, the consumer has little trouble keeping track of his oil stores and the question of stock reports is simplified for the oil company. This illustration has been introduced in this article to suggest to the reader the great value that such a system of marking would have for the grease manufacturer, in making the type and use of his grease a part of the brand. Simplification and clearness are of immense value in furthering the use of any product entering into the already complicated industrial field.

In general, six consistencies are sufficient to cover the field of industrial lubricating requirements for cup greases. There should be developed and adopted universally a standard scale for consistency determination which is uniformally adaptable to all greases of various manufacture. The consumer can easily understand labelling from (0), the softest, to (6), the hardest. Of course, there will be a difference in quality of the various greases, depending upon the skill and basic materials used by the maufacturer, but at least one factor can be standardized, and that is consistency.

Grading by Melting Points

Some advocate the grading of grease according to melting points. But again we have the lack of a standard method for measuring or defining melting point. Such methods as are in use for determining melting point by different manufacturers do not produce results that are comparable to those obtained by other manufacturers with their products. Gillette has described a method which is interesting and has possibilities from a commercial standpoint, with suitable refinement. This method makes use of an open capillary tube, 4 millimeters inside diameter and about 8 centimeters in length. The tube is graduated with 1 centimeter and 5 centimeter markings from one end. The test consists in inserting the tube into the grease, which has an undisturbed set, and drawing a plug of grease 1 centimeter up into the tube, using suction, if necessary, to get the plug. A thermometer is then attached to the tube by a band in such a manner as to bring the grease plug beside the bulb.

The thermometer and the tube are then immersed in a cup of water in such a manner as to bring the bottom of the tube carrying the grease plug 5 centi-

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Gas Oils	Car Oil	Cup Greases
Spindle Oils	Fuel Oils	Gear Greases
Motor Oils	Diesel Fuels	Axle Grease
Engine Oils	Bunker Oils	Solid Lubricants
Machine Oils	Cylinder Oils	Petroleum Coke
Dynamo Oils	Cylinder Stocks	Metal Polishes
Red Oils	Gear Lubricants	Roofing Paper
Pale Oils	Wire Rope Lubricants	Roofing
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meters below the surface of the water. This, of course, puts a hard pressure on the bottom of the grease plug.

The water bath is then heated at the rate of 3 degrees per minute. When the so-called melting point is reached, the plug, which, as before stated, is under a 5-centimeter head of water, flies up the tube. The reading of the thermometer is then taken.

Of course, such a test is dependent upon many factors, such as the soap content, the nature of the oil involved in the structure of the grease, the moisture in the grease, the type and method of manufacture, and others, but unquestionably such a test as this could be developed to a commercial value. It is now being used by certain bearing manufacturers in their research work on grease lubrication. As an illustration of some results obtained for melting point with this method, one grease of the lime soap type, having 8.16 per cent lime soap content, calculated as calcium oleat, 88.30 per cent of mineral oil, 1.55 per cent of unsaponified fatty oil, 0.19 per cent of free lime, 1.83 per cent of moisture, and 0.07 per cent of free acid, gave a "slipping" or melting point of 103 degrees Fah.; while another lime soap grease with 67.26 per cent of mineral oil content, 0.42 per cent of unsaponified fatty oil, 1.53 per cent of free lime, 27.18 per cent of lime soap, 0.05 per cent of free acid, and 3.56 per cent of moisture, gave a "slipping or melting point" of 210 degrees Fah.

After all, the real point of interest is at what temperature does the grease start to function, and a test of this sort can be developed which will act as an indicator and a clear guide.

The subject will be continued in a future article.

Damages Awarded In Non-Delivery Suit

Damages equivalent to the difference between what Columbia Refining Company of Cleveland paid for five cars of gasoline bought against that amount contracted for from Western Oil Corporation, were awarded in the Municipal Court of Cleveland last week.

On the question of what the market price was at the time Columbia bought against the contract for five cars, Columbia introduced NATIONAL PETROLEUM NEWS as the authority on markets as of any particular date. It was admitted without question by attorneys for Western Oil Corporation and the market quotations, together with the source thereof were made part of the court record in the case.

By Special Correspondent

WASHINGTON, July 5. — The land-owners of the "fair land of Poland" are experiencing some of the thrills of an oil boom. They have been leasing lands to British, French and Belgian oil men, speculators and promoters. Recently, however, they have become soured on the option system and are demanding that they who would exploit the land shall buy it in fee simple.

It is suspected that the land-owners are not certain that, with the rows for which the Poles have been famous ever since before the time that its neighbors sought

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to stop them by dividing the country, and the invasion from Russia, the Ukraine, Czecho-Slovakia, commonly known as Bohemia, they will have anything worth selling. Apparently their desire is to get theirs while the getting is good, hence the ultimatum of owners, buy or keep off.

The government departments interested in having Americans obtain foreign oil lands have taken steps to advise those interested about the developments in Poland, tho most of their information consists of dispatches from Warsaw, which may be of a common nature intended to help the land-owners get theirs.

Foreign Opportunities

The following information as to inquiries for American products is taken from the Commerce Reports gotten out daily by the bureau of foreign and domestic commerce of the United States Department of Commerce. Reserved information may be obtained by addressing the bureau at Washington, giving the number of the opportunity about which further details are desired.

33127.—A company in ENGLAND desires to secure an agency for the sale of heavy and fine chemicals, drugs, WAXES, and OILS. Quotations should be given f. o. b. New York or c. i. f. English port. Reference.

33164—A company in INDIA desires to purchase OILS. References.

33154—A merchant firm in INDIA desires to purchase OIL ENGINES of from 20 to 40 horsepower, belting LUBRICATING OILS and GREASES. Quotations should be given c. i. f. Indian port. Payment will be made of 45 days' sight draft, documents against acceptance. References.

33149—A trading company in ARGENTINA desires to secure the exclusive agency for the sale of LUBRICATING AND FUEL OILS, GASOLINE and KEROSENE. Quotations by mail or cable c. i. f. Argentine port are requested. References.

33169—An importing firm in SWITZERLAND desires to be placed in communication with exporters for the purchase of about 10,000 tons of PETROLEUM coke. Reference.

Mexico Permits Entry Of Pipeline Material

NEW YORK, July 5.—A significant development of the Mexican situation bearing upon the prosecution of field operations has been the announcement that the provisional government would permit the entry of pipe line materials, tanks and refinery requisites free of duty, effective July 1. There had been much confusion over the dutiable status of these materials and the new decree is accepted as a hopeful portent of the Mexican government's policy on the foreign oil interests.

The first news on the completion of the Transcontinental Petroleum Company's (Standard, New Jersey) No. 97 Chinampa well, rating it as a 100,000-barrel producer, has proved too sanguine. A later report,

"Horse Sense"

The Income Tax doesn't bother those who do their hauling with Traffic Trucks, because they save 50 per cent of the cost of hauling with teams.

Men with "horse sense" know that overloading a motor truck is much like overloading their stomachs—both are distressing and neither habit is profitable.

A team of horses walk on eight legs four miles an hour hauling a 4,000-lb. load—by comparison a Traffic Truck walks on four wheels fourteen miles in an hour with the same load at the same cost of maintenance—which is the more profitable?

The Traffic is the lowest priced 4,000-lb. capacity truck in the world. Built of standardized units.

Traffic Truck Specifications:

Red Seal Continental 3¼ x 5 motor; ***Covert transmission;*** multiple disc clutch; ***Bosch magneto; Carter carburetor;*** 4-piece cast shell, cellular type radiator; drop forged front axle with ***Timken roller bearings; Russel rear axle,*** internal gear, roller bearings; semi-elliptic front and rear springs; ***6-inch U-channel frame; Standard Fisk tires, 34 x 3½ front, 34 x 5 rear; 133-inch wheelbase; 122-inch length of frame behind driver's seat;*** oil cup lubricating system; chassis painted, striped and varnished; driver's lazy-back seat and cushion regular equipment. Pneumatic cord tire equipment at extra cost.

chassis $1495 *factory*

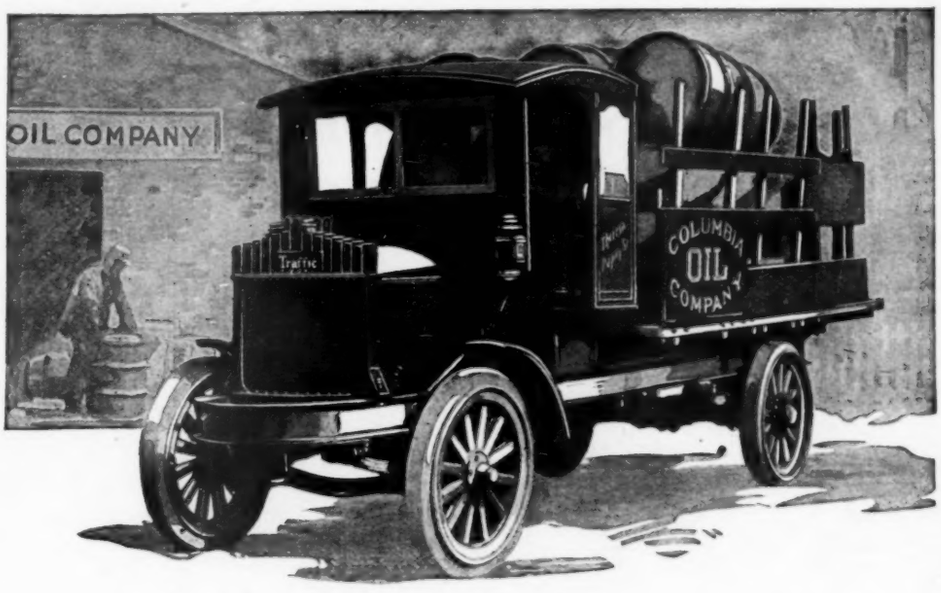
The State of Kansas has recently passed a bill to make the penalty from five to fifteen years' imprisonment for theft of an automobile—every owner of a Traffic Truck will tell you the penalty ought to be imprisonment for life.

Notice to Dealers:

It is Traffic policy to make direct connections in every city, town and village in the United States and Canada.

The demand for Traffics has made it necessary to quadruple the production this year.

Many dealers are getting in line now for future Traffic franchises. You have no time to lose.



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We are so highly pleased with its performance that we will add more Traffics as our hauling necessity requires.

Yours very truly,
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(Signed) E. J. Deitel, Vice-Pres. and Gen. Mgr.

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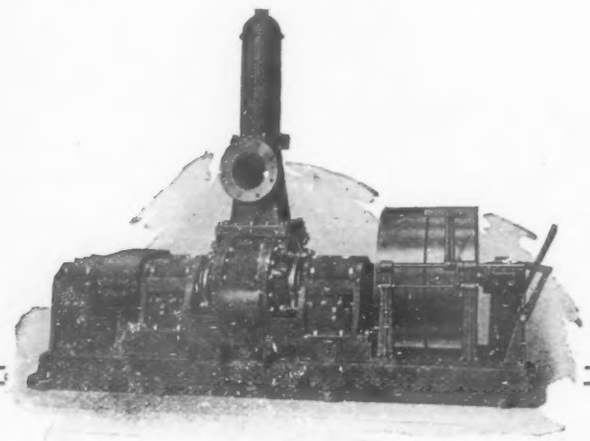

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which is accepted as reliable, gave the well's capacity as 35,000 barrels a day.

Final figures on Mexican oil shipments for May are represented as marking a new high record, 11,200,134 barrels, as against 10,288,100 barrels for March, the former record. Imports into this country for May amounted to 6,964,480 barrels ($3,477,693) of crude and 72,000 barrels ($215,352) of topped oil. The receipts at the local port during the week ending July 1 from Tampico, Tuxpam and Port Lobos were 547,000 barrels, of which 427,000 barrels were to the Standard, New Jersey, and 60,000 barrels each to the Texas & Huasteca Company. The latter also received four drums of gasoline. For the former week Mexican crude arrivals amounted to 636,000 barrels.

While further denial is made of the existence of the bubonic plague at Tampico, some of the local companies report the holding up of tanker shipments, which they attribute to this condition or the enforcement of quarantine regulations designed to check the plague.

Recommends Reparation On Sludge Acid Charge

By Special Correspondent

WASHINGTON, July 5. — An award of reparation by the Interstate Commerce Commission has been recommended by Examiner John P. Money in a tentative report on the complaint of the Sinclair Refining Company vs. Atchison, Topeka & Santa Fe, et al, on a holding that rail rates on sludge acid, in tank carloads, from Arkansas City, Eldorado, Augusta and Wichita to Coffeyville, Kan., were unreasonable to the extent that they exceeded 10 cents, prior to June 25, 1918, and 12½ cents, since that time.

Charges were collected at rates ranging from 17 to 38 cents. After considerable dispute, the carriers and the complainant agreed upon 10 cents as the proper rates prior to the application of General Order No. 28, and 12½ cents thereafter.

Sludge acid, as a commodity for transportation, was unknown to carriers prior to the erection of plants for reclaiming from it sulphuric acid.

Prior to the evolution of the method of extracting sulphuric acid from sludge, the disposition of the sludge presented a serious problem to oil refiners. Until prohibited by statutes it was emptied into streams. Some is still thrown on the ground adjacent to refineries or dumped into pits, dug for that purpose. The value of sludge is about $10 per car or 33 cents per ton, that being the price paid for the shipments in question. About 60 per cent of the volume of sludge consists of reclaimable sulphuric acid worth, at the time of the hearing of this case, from $22 to $24 per ton.

After the shipments in question were made a rate of 12.5 cents from the four points of origin, hereinbefore mentioned, was made to Coffeyville. That was equivalent to a rate of 10 cents prior to June 25, and complainants contended that the varying rates paid by it were unreasonable to the extent that they exceeded 10 cents prior to June 25, and 12½ cents thereafter. The examiner thinks that the commission should so hold and award reparation down to that basis.

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Mexican Crude Oil Exports Set Record; Plague Danger Minimized

Staff Special
HOUSTON, July 5

RECORD exports of Mexican crude oil for May, totalling 11,200,123 barrels; the completion of wells by the Cia. Transcontinental de Petroleo, S. A. (Standard of New Jersey), and the Cia. Metropolitan de Oleoductos, S. A., each with potential production of 60,000 to 100,000 barrels, daily; these, with failure to substantiate the prevalence of bubonic plague at Tampico, which would have materially curtailed operations, are the outstanding developments in the oil industry of Mexico.

Officials at Houston of American oil companies operating in Mexico have been advised of the failure to substantiate as plague suspected cases which had caused widespread reports of the possibility of an epidemic.

It is true that plague does exist at Vera Cruz, and two cases have developed in the United States—at Galveston—but, while all precautions are being taken to guard against it, rumors of plague at Tampico are declared to be unfounded and to have gained currency, probably, thru precautions against it, such, for instance, as calls made upon American oil companies by their representatives in Mexico for authority from Washington to deal with the exigencies of precautionary measures.

Los Naranjos Activity

As has been the case for a number of months, principal field activities in Mexico is in what is known to the industry as the "south country," and the current "gusher" completions are in the Los Naranjos territory, where the Texas Company of Mexico, S. A., also recently brought in a well good for a maximum of approximately 100,000 barrels daily. The well of Cia. Transcontinental de Petroleo was drilled in on lot 97, Chinampa, and was completed at 2,148 feet, estimated good for 35,000 barrels, or more, daily. Cia. Metropolitana de Oleoductos, S. A., brought in its big well on lot 135, Chinampa, June 18, at 1,972 feet, good for 60,000 to 100,000 barrels, daily. Both the wells were closed in without trouble until they can be opened up for regular production.

Metropolitana's well is about 500 meters (a meter being 39.37 inches) from the big well of the Texas Company of Mexico, S. A., brought in for 100,000 barrels, April 18, on lot 114. Another important completion in that country, dating back to May 2, was that of Cias. del Agwi, S. A., rated a 125,000-barrel producer at 2,135 feet, on lot 159, Chinampa.

These completions are reflected in the May export figures, now available, and the newer wells may be expected to show up in the June movement from the ports of Tampico, Tuxpam and other sea-loading stations along the east coast of Mexico. Because of a Mexican government tax on stored oil, the water movement each month practically represents the production of the Mexican fields, only such crude as can be currently handled being produced except in a few cases, and then to no considerable extent.

For the most part, oil interests feel that they have little to fear from the provisional administration in Mexico, which replaced the Carranza regime, and while there have been hints in the daily press to the effect that the much discussed Article 27 of the constitution, nationalizing deposits of oil, will be enforced by Adolfo de la Huerta, it will be remembered that foreign correspondents were told in Mexico City, June 19, that this law will not be retroactive and that it will be liberally interpreted.

Individuals in a position to have a good perspective of the situation, because of their responsible places in the direction of the operations of companies active in Mexico, feel that as finally adjusted they will continue to pay the export tax on crude, which amounts to about 9 cents a barrel, and that they will be, at least for the most part, relieved of the confiscatory decrees sought to be enforced by the Carranza regime.

This is felt to be particularly true in view of the friendly disposition toward foreign interests that is considered to be the policy of the new administration.

In this connection the arrival at Galveston of Dr. Adolfo Ferrer, oil fiscal agent for the De la Huerta government, to take up his duties at this port in the inspection of all crude oil that is shipped from Tampico to Galveston and forwarded to Naco, Ariz., or distribution in the state of Sonora, Mexico, has been followed by an interview in which he is credited with the statement that the De la Huerta administration desires to prompt friendly relations between Mexico and the United States.

Field Work More Active

Meantime, field work which had been more or less held back in the "lower" fields of Mexico, because of the incessant rains of the last month, is taking on fresh interest and construction work is being pursued generally to the end that the oil companies may increase their facilities and press operations in general.

Standard Oil Company of New Jersey, in order to combine its interests in Mexico under one management, has transferred to the Transcontinental Petroleum Company its refinery near Tampico; the Transcontinental's 16 miles of railroad from Soledad to lot 135, Chinampa, has been laid, 36 guage with 40-pound rails, on a grade of one and a half per cent, gasoline locomotives to furnish the power that will carry material to the fields in rainy weather, and a $150,000 housing project for the Transcontinental's men is to be constructed back of the American school at Tampico, in addition to a modern office building.

Another club for employes is planned by the Mexican Gulf Oil Company, in addition to residences, both the Gulf and the Transcontinental will build for others of their employes. The field railroad of the Transcontinental is an equipment such as only two other operating companies in the field are provided with—the Huasteca Petroleum Company and the Compania Mexicana de Petrolia "El Aguila" also being equipped against the rainy season.

Huesteca's Record Exports

Huasteca Petroleum Company, an E. L. Doheny operating company, of which the Mexican Petroleum Company is another, led the list of May exports from Mexico with 2,416,801 barrels, establishing a new record as the principal transporter of Mexican crude. The Metropolitan, El Aguila and the Standard of New Jersey each exceed a million barrels.

Comparative export figures from Tampico, Tuxpam and Port Lobos total as follows, Cias. del Agwi, S. A., entering the list for the first time and the Terminal Union Company making shipments to Cuba as shown in the table:

Comparative Exports From Mexico

Company	January 1920	February 1920	March 1920	April 1920	May 1920
Huasteca Petroleum Co.	1,753,564.15	1,626,588.84	2,035,920.24	2,022,806.21	2,416,801.87
Penn-Mex. Fuel Co.	749,084.45	155,218.75	628,088.27	881,006.91	378,354.46
Compania Mexicana De Petrolia "El Aguila"	1,013,314.00	1,458,339.00	1,494,784.00	1,382,959.00	1,900,002.00
Texas Company of Mexico, S. A.	700,445.67	667,582.62	803,143.42	647,993.88	837,898.73
Cortez Oil Company	456,286.00	348,792.00	156,079.00	44,239.00	364,129.00
Standard Oil Company of New Jersey	1,013,750.56	837,078.23	1,729,266.00	1,212,732.96	1,089,587.96
Compania Metropolitana de Oleoductos, S. A.	554,537.08	670,074.33	546,906.29	841,177.23	1,038,411.90
East Coast Oil Co. (Southern Pacific)	375,937.27	456,936.03	.....	454,051.11	520,990.85
Freeport Mexican Fuel Oil Company	375,403.90	570,249.89	930,123.38	722,184.41	595,546.42
Mexican Gulf Oil Company	581,907.37	354,982.47	705,261.77	797,662.00	665,659.45
Pierce Navigation Company	46,999.00	84,420.00	302,165.00	270,180.00	237,529.00
La Corona Oil Company	66,600.00	110,571.69	286,161.81	272,208.00	270,188.58
National Petroleum Corp.	31,001.72	95,682.50	92,287.99	138,878.43	64,695.32
New England Fuel Oil Co.	97,700.41	.....	30,780.35	63,392.00	70,478.00
Inter-Ocean Oil Company	34,331.86	68,395.86	54,853.52	34,343.91	38,000.00
Tal-Vez Oil Company	210,966.17	182,631.62	298,446.36	373,367.53	*371,101.55
National Oil Company	.....	.....	.....	33,129.39	94,224.00
Terminal Union Company	.....	.....	.....	.....	59,774.37
Cias. del Agwi, S. A.	.....	.....	.....	.....	186,750.82
Totals	8,160,829.59	7,677,942.83	10,794,267.40	10,125,442.35	11,200,123.34

*Includes 275,680.91 barrels consigned to Cochrane, Harper & Co.

REFINERY-TANK WAGON MARKETS

Export Demand Stimulates Market

IMPROVEMENT of the tanker situation, with more vessels available to carry oil to foreign countries has brought about a quickening in purchases of various products, particularly cylinder stocks and gasoline, on the part of the big exporting companies. In the Mid-Continent especially, a strong demand for gasoline over the coming months, particularly 58-60-gravity stuff, is thought to be foreshadowed by the fact that a large export company recently closed a deal for 1,500,000 gallons of this product at 23½ cents a gallon.

Export Buying Had Been Inactive

The companies buying for export have been largely out of the market for some time, due to the inability to get tankers to transport the oil and this order for gasoline is thought to indicate the opening of the foreign outlet in a big way. It has been evident for some months that foreign buyers were eager for American gasoline, but their orders have been refused, due to the lack of transportation and to some extent due to the erratic and confused condition of foreign exchange.

It has been pretty thoroly demonstrated that the casinghead-kerosene blend put out by some of the companies with large stocks of burning oil to dispose of is, generally speaking, an unsatisfactory proposition. The jobbers who bought the stuff and offered it to their customers were the recipients of many complaints from motorists and are not in the market for any more of this product. This fact, it is thought, will also have a favorable effect on the straight run gasoline market.

Gas Oil Holds Its Strength

Gas oil remains strong all over the country and fuel oil is holding up in general, altho it is off slightly at most of the refining centers from the prices ruling a week ago. Kerosene is still somewhat a drug on the market, altho there was a tendency, especially in the east, to quicken in response to the reopening of the export market as indicated by the big purchase of gasoline for overseas customers.

Tank wagon prices of gasoline and kerosene were stabilized over the week with students of the market in doubt as to whether to expect further increases in the near future. The course of crude prices in the Mid-Continent for the immediate future is problematic. Altho the present production in that territory is still considerably below the theoretical refining capacity of the plants, actually it is well in the lead of the requirements of those well financed and well managed plants that are continuously operating, and stocks are being added to considerably in many places.

Market Reflects Crude Rumors

Rumors of increases in the posted price of California heavy crudes are in circulation around Houston, with the belief prevailing that any such increase would affect also the price of the Gulf Coast crudes. This feeling has already brought a strengthening tendency into evidence as regards the neutrals turned out at the Gulf Coast points.

See Strengthening Of Straight Run Gasoline

TULSA, July 6.—Many close observers of marketing conditions in the Mid-Continent field see a number of signs indicating the development of a strong demand for straight-run gasoline, particularly new navy specification. One of these factors is the purchase by a large export corporation of roundly 1,500,000 gallons of 58-60 in the past ten days at a price of 23½ cents. This company has been out of the market entirely for some time for kerosene and has bought but very little gasoline, due to the inadequate tanker facilities. It has been common knowledge that the export termini in the south have been in a badly congested condition, but the recent purchase would indicate that this congestion has been cleared up to a large extent. Another angle that is expected to exert a strong influence on the demand for straight-run gasoline is the failure of the casinghead kerosene blend to make good. In this connection many marketers of years of experience in marketing refined products contend that the application of the term gasoline to this product is a misnomer and that should a test case be made, it is an open question whether jobbers would be permitted to market this product under the name of gasoline.

Traffic conditions continue to have a most unfavorable effect upon the Mid-Continent market, apparently growing worse rather than better and the leasing of approximately 1,600 cars for one company operating in this territory has tended to aggravate the situation.

Fuel oil enters July 25 cents off from the level of thirty days ago, and will probably record a like slump for July, as there are a number of large contracts expiring at this time that industrial plant managers will be slow to renew at the present price.

Kerosene shows a further weakening, a number of refiners offering it at 11 cents and the Standard has bought a hundred cars or so at this figure within the past few days.

Staff Special

FORT WORTH, July 6.—The element of competition asserting itself once more with the private management of railroads is helping transportation conditions in Texas. The recent inauguration of a daily tank train from Shreveport, La., to Atlanta, Ga., making the trip in 58 hours, a distance of approximately 600 miles, is already bringing letters of approval from oil operators to rail officials.

The train in question traverses three roads. It travels from Shreveport over the Vicksburg, Shreveport & Pacific via Munroe to Vicksburg, Miss. From

there it travels over the Alabama & Vicksburg to Meridian, Miss. From Meridian to Selma, Ala., it is routed over the Southern. From Selma to Atlanta, Ga., it runs over the Western Railway of Alabama, and the Atlanta & West Point, which are virtually the same road.

'Lub' Market Strong In South Texas

Staff Special

HOUSTON, TEX., July 6.—Gossip on the Pacific coast regarding an impending crude oil advance there, which many regard as certain, together with the probability of its influencing Gulf coastal crude oils when it does come, is having effect of quickening the pulse of the lub market in south Texas. Demand for lubricants is such, however, that refiners say the situation would seem to warrant an early advance in lub prices even if there is no advance in crude prices..

Demand is leaning currently toward 500 and 750 viscosity lubs with the latter in the lead. Such a condition may be expected to continue thru August and possibly into the early part of September depending upon the season, after which the laying in of stocks of other grades will begin.

The fuel oil market, while recently responsive to local conditions which brought a slump, has again reached upward and an offering of three cars daily by a Mid-Continent refiner at $3.25 a barrel, taking into account crude oil changes, is considered by many students of the situation to represent about as low a contract price as may be expected. Naturally there will be some offerings as local congestion arises at times or other plant conditions govern but as a broad principle it is the general belief of the industry that there will be higher prices in the fall. Shortage of coal cars has kept up buying of oil for fuel, movement being obtained on the latter which is impossible on the previously mentioned commodity. The prospect of another coal strike in the fall also is contributing to demand for oil fuel so that these contributing factors are being felt with new high levels for fuel oil prospective for the months when demand is normally great.

Trading Active In All Refined Products

By Special Correspondent

PITTSBURGH, July 6.—Strong demand for gasoline and increasing inquiries for cylinder stocks were the features at the western Pennsylvania plants of a week broken up by the holiday. Trading was in good volume on practically all products, limited only by the sub-normal movement of tank cars. This movement, however, is reported by the refiners as improving from week to week.

There were no marked changes in prices over a week ago but the demand for cylinder stocks showed considerable increase, which was attributed by the refiners to the opening of the export trade that has been more or less inactive for some weeks, due to the tanker shortage. Considerable slowing up of

Refinery Markets, All Products

Pennsylvania, Oklahoma, North and South Texas

FOLLOWING are the average market prices on the more important petroleum products in cents per gallon f. o. b. refinery in Oklahoma, Texas and Pennsylvania. These are actual prices at which the bulk of each product is moving from the refineries at the present time. Anyone having knowledge of different prices which have obtained on any considerable quantity of any of the products mentioned will greatly favor us by advising us at once.

Prices effective July 6.

GASOLINE AND NAPTHAS

Pennsylvania	Prices, July 6
54 Naptha	25½
56 Naptha	26
58 Naptha	26½
60 Straight-run gasoline	27
62 Straight-run gasoline	27½
64 Straight-run gasoline	28½
68 Straight-run gasoline	30
58-60 Blend, 460 end point	26
60-62 Blend, 450 end point	26¼
62-64 Blend, 450 end point	26½
66-68 Blend, 440 end point	26¾
68-70 Blend, 440 end point	27
68-70 Blend, 420 end point	24

Oklahoma	
50-52, 450 end point	22 -22½
56-58, 450 end point	23 -23¼
58-60, 430-440 end point	23¼-23¾
60-62, 400 end point	24½-25
62-64, 375 end point	25 -25½
64-66, 365 end point	26 -27
58-60, 140 i. b p.-428 e. p.	23½-24
80-84 Raw Casinghead	18 -19
68-70 Blend, 430-435 end point	22½-23
66-68 Blend, 435 end point	22½-23
60-62 Blend, 435 end point	22½-23
58-60 Blend, 440-450 end point	22½-23
74-76 Absorption Gasoline	21½-22¾
60-62 Kerosene Blend	17½-18½

North Texas	
50-52, 450-460 end point	21 -21½
52-54, 440-450 end point	21½-22
56-57, 450 end point	23¼-23¾
58-60, 440 end point	23½-24
58-60, 140 i. b: p.-428 e. p.	24 -24½
60-61, 400 end point	26 -26½
New Navy Specification, 140 i.b.p.437e. p.	23½-24

BURNING OILS

Pennsylvania	
45 Water White	15
46 Water White	15½
47 Water White	15¾-16
300 Burning Oil	14

Oklahoma	
42-43	11 -11½
44-46	17 -17½
42-43 Distillate	10¾-11¼

North Texas	
40-41 Prime White	8¾- 9¼
42-44 Water White	10 -10½
40-41 Distillate	9½-10

NEUTRAL OILS

Pennsylvania	Prices, July 6
200 Vis. No. 3 Assoc. Filt.	35
180 Vis. No. 3 Assoc. Filt.	33
150 Vis. No. 3 Assoc. Filt.	30

Oklahoma (Vis. test 70)	
100 Vis. No. 2 Color	17½-18¼
200 Vis. No. 3 Color	28 -28½
160 Vis. No. 4 Color	24 -25
200 Vis. No. 4 Color	26½-26¾
200 Vis. No. 5 Color	25¾-26

South Texas (Vis. test 100; cold test 0)	
70 Vis. No. 2 Color Unfilt. Pale	17½-21¾
100 Vis. No. 2 Color Unfilt. Pale	18¾-22¾
150 Vis. No. 2½ Color Unfilt. Pale	21½-24
200 Vis. No. 3 Color Unfilt. Pale	28¾-31½
300 Vis. No. 3 Color Unfilt. Pale	35¾-36½
500 Vis. No. 3½ Color Unfilt. Pale	40¾-41½
750 Vis. No. 4 Color Unfilt. Pale	47¾-49½
70 Vis. No. 1½ Color Filt. Pale	22¾
100 Vis. No. 1½ Color Filt. Pale	28½
150 Vis. No. 1½ Color Filt. Pale	32½
200 Vis. No. 2 Color Filt. Pale	37¾
300 Vis. No. 2 Color Filt. Pale	42
500 Vis. No. 2½ Color Filt. Pale	46½
750 Vis. No. 2½ Color Filt. Pale	55¾
200 Vis. No. 5½ Color Red Oil	29½-30¾
300 Vis. No. 5½ Color Red Oil	31½-33
500 Vis. No. 6 Color Red Oil	36½-38¾

CYLINDER STOCKS

Pennsylvania	
600 Steam Refined	48
650 Steam Refined	61½
635 Steam Refined	56½
600 Flash	67
600 Amber Filtered	62½
600 Medium Filtered (D)	72½
Cold Test Stocks (bright filtered)	85 -87
Cold Test Stocks (dark filtered)	83 -85

WAX

Pennsylvania	
122-124 White Crude Scale Wax, N. Y., lb.	9¾
124-126 White Crude Scale Wax, N. Y., lb.	10

Oklahoma	
122-124 White Crude Scale Wax	8-8¾

FUEL OIL

Pennsylvania	
36-40 Fuel Oil	13½

Oklahoma	
32-36 Gas Oil (gal.)	8 - 8¾
24-26 Fuel Oil (bbl.)	$3.00-$3.15
Fuel Oil, buyers' cars (bbl.)	$2.60-$2.70

North Texas	
34-36 Gas Oil (gal.)	8½- 9
32-34 Gas Oil (gal.)	8¼- 8¾
30-32 Gas Oil (gal.)	7¾- 8¼
24-28 Fuel, per bbl.	$3.00-$3.10

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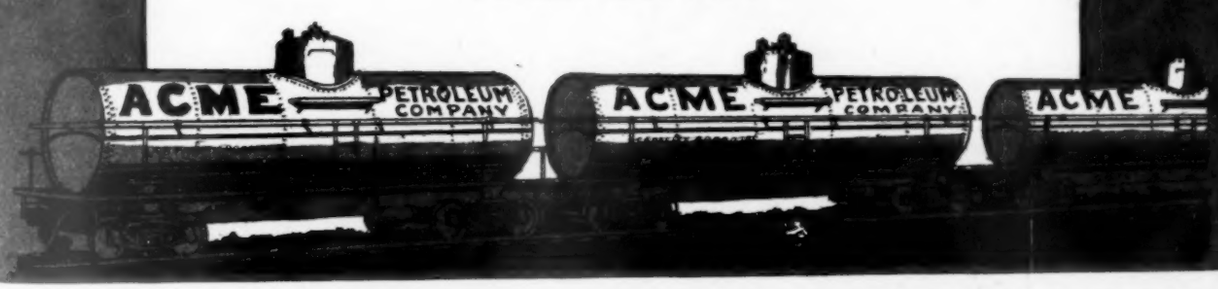

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the demand for fuel oil is noted by some of its refiners and some of them are shipping their stuff at as low as 12 cents a gallon. The larger part of it, however except in special cases, is moving at around a cent higher.

The neutrals are better than holding their position of a week ago, considerable increase in demand being noted with consequent tendency to stiffening of prices.

Naptha Weakens At North Texas Plants

Staff Special

FORT WORTH, July 6.—A sluggish tendency was felt in the gasoline and naptha market during the past week, especially in the early days of the week when naptha settled a half a cent. Gasoline, altho not moving very rapidly, suffered no drop in price. The volume of output from local refineries and the local demand were about as usual, but exporters have not been buying much. The market strengthened again on the first of the month.

The kerosene market stiffened during the past week, almost recovering from the drop of the week before. The foreign market is also responsible for this. Exporters have purchased several cargoes of kerosene, with the result that it has been strong at 10.5 cents.

Fuel oil is still on the upward move. This has affected gas oil as well as fuel, but the latter is stronger. Local buyers, including numerous municipal public service corporations, have been buying fuel oil extensively within the past week. Ordinarily they are in the market during the early summer or late spring in this section, but this year has been an exception. They have been holding off, supposedly for the usual summer slump in the fuel oil prices which has not materialized.

To Inspect Tank Wagons For Accurate Measure

The Commissioner of Weights and Measures in Minnesota has added to his official duties the inspection of tank wagons and tank trucks used by oil companies there in the distribution of oil products to determine whether or not they are measuring accurately. That official has taken the stand that the oil companies, by selling gasoline and kerosene in tank wagons or trucks, are violating the state statute unless the compartments of such trucks or wagons have been measured and sealed by the state inspector's office.

Acting, so he said, on a series of complaints, the commissioner announced that the marketing of gasoline by hose from tank wagons would have to be discontinued and the contents measured out into customers' tanks by buckets inspected by the Weights and Measures Department. At a meeting at St. Paul on June 29th, the oil interests convinced the commissioner that marketing by hose from tank wagons was reliable and showed the inconvenience that both the oil companies and their customers would be put to were they forced to handle deliveries in buckets. The oil companies agreed that, where gasoline

Tank Wagon, Service Station Markets

Gasoline and Kerosene

BELOW are given in cents a gallon, service station and tank wagon quotations on gasoline and tank wagon quotations for kerosene as quoted by the Standard Oil Companies, the points at which prices are given being arranged by Standard Oil marketing districts.

	Gasoline Tank Wagon July 5	Gasoline Service Station July 5	Oil Tank Wagon July 5
S. O. NEW JERSEY DISTRICT			
Atlantic City, N. J.	28.5	30.5	17.5
Newark, N. J.	28.5	30.5	17.5
Annapolis, Md.	29.5	31.5	18.5
Baltimore, Md.	28.5	30.5	17.5
Washington, D. C.	28.5	30.5	17.5
Danville, Va.	30	32	18.5
Norfolk, Va.	29	31	17.5
Petersburg, Va.	29.5	31.5	18
Richmond ,Va.	29	31	17.5
Roanoke, Va.	30.5	32.5	19
Charleston, W. Va.	29.5	31.5	18
Keyser, W. Va.	30	32	18.5
Parkersburg, W. Va.	28.5	30.5	17
Wheeling, W Va.	29.5	31.5	18
Charlotte, N. C.	30	32.5	19.5
Hickory, N. C.	30.5	32.5	20
Mt. Airy, N. C.	30.5	32.5	20
Salisbury, N. C.	30.5	32.5	20
Charleston, S. C.	29.5	31.5	18
Columbia, S. C.	31	33	19.5
S. O. NEW YORK DISTRICT			
New York, N. Y.	30	32	18
Albany, N. Y.	31	33	19
Buffalo, N. Y.	30	32	18.5
Syracuse, N. Y.	31	33	19
Boston, Mass.	31	33	19
Burlington, Vt.	31	33	19
Bridgeport, Conn.	31	33	18
Hartford, Conn.	31	33	18
New London, Conn.	31	33	18
Providence, R. I.	31	33	19
Augusta, Me.	31	33	19
Portland, Me.	31	33	19

NOTE—The Atlantic Refining Company which markets in part of New England territory advanced its prices one cent a gallon on gasoline May 12 to 30.6 cents tank wagon and 34 cents service station at the following points: Providence, Hartford, New Haven, Worcester and Springfield.

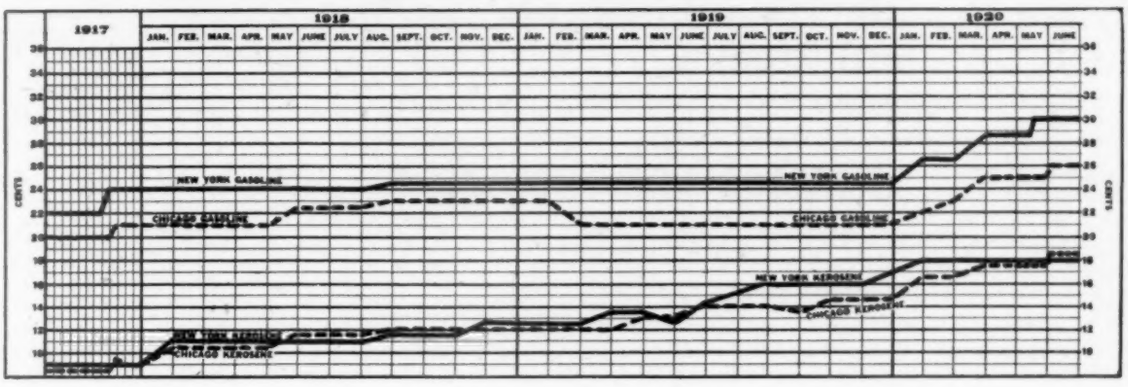
ATLANTIC REFINING DISTRICT			
Pittsburgh, Pa.	29.7	33	20
Philadelphia, Pa.	29.7	33	20
Dover, Del.	29.7	33	20
Wilmington, Del.	29.7	33	20
S. O. OHIO DISTRICT			
Cleveland, Ohio.	29	30	20

NOTE: Tank Wagon markets at all points in Ohio are the same as for Cleveland.

S. O. KENTUCKY DISTRICT			
Lexington, Ky.	28	30	20
Louisville, Ky.	28	30	19
Bowling Green, Ky.	29	31	19.5
Jackson, Miss.	28	28	15
Natchez, Miss.	30	30	15.5
Birmingham, Ala.	31.5	31.5	19.5
Mobile, Ala.	28	30	18.5
Atlanta, Ga.	28.5	30.5	20.5
Augusta, Ga.	28.5	30.5	20.5
Savannah, Ga.	28	30	19.5
Fort Myers, Fla.	30.5	32.5	16.5
Tampa, Fla.	28.5	30.5	15.5
S. O. LOUISIANA DISTRICT			
Little Rock, Ark.	29	31	21
New Orleans, La.	28	30	17.5
Shreveport, La.	26.5	28.5	18.5
Memphis, Tenn.	27	29	19
Nashville, Tenn.	29.5	31.5	18.5

	Gasoline Tank Wagon July 5	Gasoline Service Station July 5	Oil Tank Wagon July 5
MAGNOLIA PETROLEUM DISTRICT			
Muskogee, Okla.	29	31	20
Oklahoma City, Okla.	28	30	18
Tulsa, Okla.	27	29	19
Fort Smith, Ark.	27.5	29.5	20
Texarkana, Ark.	28	30	21.5
Amarillo, Texas	30	32	21
Dallas, Texas.	29	31	20
El Paso, Texas.	30	32	21
Fort Worth, Texas.	29	31	20
Galveston, Texas.	29	31	20
Houston, Texas.	29	31	20
S. O. INDIANA DISTRICT			
Chicago, Ill.	26	28	18.5
East St. Louis, Ill.	27.1	28.1	19.3
Peoria, Ill.	27.3	28.3	19.5
Indianapolis, Ind.	27.3	28.3	19.7
Fort Wayne, Ind.	27.1	28.1	19.5
Bay City, Mich.	28.1	29.1	19.8
Detroit, Mich.	28	29	19.8
St. Louis, Mo.	25.7	28	18.7
Kansas City, Kans.	26.2	27.2	17.6
Topeka, Kans.	27	28	18.2
Wichita, Kans.	26.8	27.8	18.2
Des Moines, Ia.	27	28	18.9
Keokuk, Ia.	27.1	28.1	18.9
Sioux City, Ia.	27	28	19
La Crosse, Wis.	27.8	28.8	19.9
Milwaukee.	27.3	28.3	19.1
Madison, Wis.	27.8	28.8	19.2
Minneapolis, Minn.	27.2	29.2	20
Pipestone, Minn.	28.2	29.2	19.9
Aberdeen, S. D.	28 9	30	20.4
Sioux Falls, S. D.	28.8	29.8	19.9
Bismarck, N. D.	31.7	32.7	22.4
Fargo, N. D.	30.6	31.6	21.3
Grand Forks, N. D.	30.8	31.8	21.5
Minot, N. D.	32.3	33.3	23
Bartlesville, Okla.	27.1	29.1	18.5
S. O. NEBRASKA DISTRICT			
Crawford, Neb.	29	29	21
Omaha, Neb.	28.5	28.5	19.75
CONTINENTAL OIL DISTRICT			
Denver, Colo.	31	33	23
Glenwood Springs, Colo	34.5	36.5	26
Pueblo, Colo.	31	33	23
Basin, Wyo.	29	29	20.5
Casper, Wyo.	27.5	27.5	19
Cody, Wyo.	30.5	30.5	22
Cheyenne, Wyo.	30.5	32.5	22
Lander, Wyo.	29.5	29.5	21
Billings, Mont.	30.5	31.5	22.5
Butte, Mont.	32	33	24
Great Falls, Mont.	32	33	24
Helena, Mont.	32	33	24
Miles City, Mont.	32	33	24
Ogden, Utah.	31	33	22.5
Salt Lake City, Utah.	31.5	33	22.5
Boise, Idaho.	32.5	31	24
Albuquerque, N. M.	31.5	33.5	24
S. O. CALIFORNIA DISTRICT			
Los Angeles, Cal.	23.5	23.5	13.5
San Francisco, Cal.	23.5	23.5	13.5
Portland, Ore.	25.5	25.5	14.5
Seattle, Wash.	24.5	24.5	14.5
Spokane, Wash.	28	28	18
Tacoma, Wash.	24.5	24.5	14.5

Tank Wagon Markets, Chicago and New York



was marketed in less than tank wagon compartments, it should be measured out in buckets. They also agreed that tank wagons and trucks should be inspected, measured and sealed by the state inspector. Every jobber in the state has been asked to send notice of all tank wagons in use by him to George C. Neale, Inspector of Weights and Measures, Old Capitol building, St. Paul. A fine of $100 is to be imposed where wagons or trucks are used without inspection.

Tar Up On Scarcity; Animal Oils Easier

Staff Special

NEW YORK, July 3.—The continued easing of naval stores, with the exception of tar, is the outstanding feature of the markets for refiners' and jobbers' supplies. Turpentine from yard in the local trade is quoted at $1.62½ a gallon, representing a decline of 12½ cents during the week. Savannah has slumped from $1.52½ to $1.41 and Jacksonville from $1.52 to $1.41. Stocks of turpentine here and in the south have been increasing on the tendency of buyers to operate on the closest margin of requirements and the difficulty in effecting shipments of the heavier primary receipts. The export demand is reported slack.

Practically the same conditions apply to the rosin situation. Rosin prices have receded on the full line by 75 cents to $1.10 a barrel on spot, while net changes at primary quarters show declines of 90 cents to $1.40. Local prices of rosin oil show considerable variance, 73 to 90 cents on first, 75 cents to $1.20 on second, 86 cents to $1.25 on third and 96 cents to $1.30 on fourth run. A good inquiry is reported, with stocks limited. Advances have been made in tar of 75 cents to $15.25 on kiln dried and of 50 cents to $15.50 on retort. Receipts from the south have been light and an active demand has developed. The spot shortage is more marked in kiln dried.

Interest in the linseed oil market is centered in the citation of twelve leading crushers and jobbers on charges by the Department of Justice, under the Sherman anti-trust law, of conspiracy to suppress competition by means of an open price plan. Under this alleged arrangement, prices are declared to have been boosted from 50 cents to $1.80 a gallon between 1916 and 1918, without the operation of the law of supply and demand. The present market indicates considerable variation in crushers' views, sharp competition having been developed to secure the little business in prospect. Futures are especially dull. Quotations are largely nominal at $1.50-$1-55 per gallon for July, $1.40-$1.45 for August-September and $1.35 for October forward. Offers of soya bean oil for prompt and forward shipment from the Pacific coast have been meager, but the buyers have shown little interest in the market. About the only oil available for current delivery was said to comprise three cars, quoted at 10¾-11¼ cents per pound. A sale of 20 cars was reported at 10½-11 cents for August-October delivery from the Pacific coast. Lard and neatsfoot oils are easier, in sympathy with pressing stock and the slackness of buying interest. Refined menhaden oils are nominally steady, but crude is weaker at 70 cents, Baltimore, chiefly on the pressure to unload hold-over stocks. The fishing in Chesapeake Bay is reported to be progressing favorably, despite the trouble over help on the boats.

Gasoline Stronger On Foreign Demand

NEW YORK, July 3.—Effective June 29, gasoline and naptha export prices were established at an advance of one cent to the following basis:

Standard, New Jersey—U. S. Navy specification, bulk, 24 cents, cases, 40¼ cents; export naptha, bulk, 25½ cents; 63-66 degrees, 28½ cents. 66 68 degrees, 29½ cents, none of the last three grades being offered in cases.

The Tide Water Oil Company is in line with the one cent increase but quotes only 59-61 degree gasoline for export at 29½ cents in bulk and 40½ cents in cases, refinery.

The Standard, Louisiana, has announced the same advance on its export grade, running 58-60 degrees, to 23¾ cents in bulk, Baton Rouge.

The strengthening of the market is based on the unusually heavy demand for foreign account and the restriction upon available supplies. Home requirements are playing such a dominant part upon the

Refiners' and Jobbers' Supplies

Following are the average market prices for the week on the principal materials used by refiners and jobbers, f. o. b. shipping point as effective July 6, 1920.

Refiners' Supplies

	June 28	July 6
Soda Ash	$3.75 cwt.	$3.60 cwt.
Silicate of Soda 60 deg.	2.90 cwt.	2.90 cwt.
Sal Soda	1.35 cwt.	1.85 cwt.
Caustic Soda, solid	6.50 cwt.	6.40 cwt.
Sulphuric Acid, tank cars, f. o. b. sellers' shipping point	21.00 ton	21.00 ton

Jobbers' Supplies (Open Market)

English Degras	7c lb.	7c lb.
Domestic Degras	6¾c lb.	6¾c lb.
Chloride of Lime	$7.50 cwt.	$7.00 cwt.
Horse Oil	15c lb.	15c lb.
Lard Oil—		
Ex. Winter Strained	$1.60 gal.	$1.45 gal.
Extra No. 1	1.40 gal.	1.25 gal.
No. 1	1.35 gal.	1.20 gal.
No. 2 Lard	1.30 gal.	1.15 gal.
Tallow Oil	1.50 gal.	1.45 gal.

	June 28	July 6
Neatsfoot Oil—		
20 degrees	$1.80 gal.	$1.70 gal.
30 degrees	1.70 gal.	1.60 gal.
40 degrees	1.60 gal.	1.50 gal.
Menhaden Fish Oil		
Light pressed	1.00 gal.	1.00 gal.
Winter Bleached	1.05 gal.	1.05 gal.
Extra winter bleached	1.10 gal.	1.10 gal.
Whale Oil		
Extra winter bleached	1.40 gal.	1.35 gal.
Soya Bean Oil	17½c lb.	16c lb.
Herring Oil	1.35gal.	1.25 gal.
Seal Oil	1.75 gal.	1.75 gal.
Rosin B, N. Y.	14.25	12.25
Rosin F, N. Y.	18.35	15.25
**Rosin B	11.50	10 00
**Rosin F	16.15	14.05
Rosin Oil, 1st run	.73 gal.	.73 gal.
Rosin Oil, 2nd run	.75 gal.	.75 gal.
Linseed Oil, July	1.50 gal.	1 50 gal.
Turpentine, N. Y.	1.75 gal.	1.49 gal.
**Turpentine	1.55 gal.	1.35 gal.
Pine Tar—		
Kiln Burnt Oil, bbls.	14.50	15.25
Retort Oil, bbls.	15.00	15.00

**Savannah, Ga., market.

Crude Production, Consumption and Stocks

As Reported by U. S. Geological Survey

THE column headed Production shows the quantity of oil received from producers by pipe line and other marketing companies and by refineries that receive the crude directly from the well. Figures as to oil consumed on leases and producers' stocks are not included except for California, which include all petroleum brought to the surface

The column headed Delivered to Consumers includes figures on domestic crude petroeum delivered to consumers by pipe lines and other marketing compa nies.

Stocks include domestic crude held in storage on the last day of the month by pipe lines and other marketing companies. Crude oil delivered to refiners is not included nor is petroleum held in storage by producers on leases. Figures are in barrels of 42 gallons.

Field	Production	Delivered to Consumers	Stocks
APPALACHIAN			
Total, 1919	29,232,000	28,922,000	Dec. 31, 3,757,000
January, 1920	2,140,400	2,015,400	Jan. 31, 3,882,000
February, 1920	2,087,000	1,976,000	Feb. 29, 3,993,000
March, 1920	2,565,000	2,242,000	Mar. 31, 4,316,000
April, 1920	2,493,000	2,681,000	Apr. 30, 4,128,000
LIMA-INDIANA			
Total, 1919	3,444,000	3,442,000	Dec. 31, 1,323,000
January, 1920	202,000	229,000	Jan. 31, 1,296,000
February, 1920	214,000	305,000	Feb. 29, 1,205,000
March, 1920	266,000	234,000	Mar. 31, 1,237,000
April, 1920	254,000	269,000	Apr. 30, 1,222,000
ILLINOIS			
Total, 1919	12,436,000	10,165,000	Dec. 31, 4,194,000
January, 1920	887,000	1,219,000	Jan. 31, 3,862,000
February, 1920	831,000	789,000	Feb. 29, 3,904,000
March, 1920	992,000	978,000	Mar. 31, 3,918,000
April, 1920	884,000	906,000	Apr. 30, 3,896,000
ALL MID-CONTINENT (Okla., Kans., Central and North Texas, North La.)			
Total, 1919	196,891,000	198,901,000	Dec. 31, 76,712,000
January, 1920	19,474,000	18,860,000	Jan. 31, 77,326,000
February, 1920	19,213,000	18,819,000	Feb. 29, 77,720,000
March, 1920	20,745,000	20,241,000	Mar. 31, 78,188,000
April, 1920	21,103,000	20,922,000	Apr. 30, 78,369,000
Oklahoma-Kansas	**Production**	**Central North Texas**	**Production**
January, 1920	11,296,000	January, 1920	5,778,000
February, 1920	11,510,000	February, 1920	5,175,000
March, 1920	12,757,000	March, 1920	5,405,000
April, 1920	12,307,000	April, 1920	5,064,000
North Louisiana			**Production**
January, 1920			2,400,000
February, 1920			2,201,000
March, 1920			2,546,000
April, 1920			3,732,000
GULF COAST	**Production**	**Delivered to Consumers**	**Stocks**
Total, 1919	20,568,000	17,417,000	Dec. 31, 12,575,000
January, 1920	1,608,000	1,855,000	Jan. 31, 12,328,000
February, 1920	1,711,000	2,015,000	Feb. 29, 11,934,000
March, 1920	2,020,000	2,464,000	Mar. 31, 11,489,000
April, 1920	2,031,000	2,272,000	Apr. 30, 11,248,000
ROCKY MOUNTAIN			
Total, 1919	20,568,000	17,417,000	Dec. 31, 811,000
January, 1920	1,180,600	1,127,600	Jan. 31, *217,000
February, 1920	1,175,000	1,170,000	Feb. 29, 229,000
March, 1920	1,334,000	1,336,000	Mar. 31, 227,000
April, 1920	1,319,000	1,308,000	Apr. 30, 238,000
CALIFORNIA			
Total, 1919	101,564,000	103,016,000	Dec. 31, 29,142,000
January, 1920	8,488,000	9,377,000	Jan. 31, 28,253,000
February, 1920	7,974,000	8,873,000	Feb. 29, 27,354,000
March, 1920	8,570,000	9,702,000	Mar. 31, 26,222,000
April, 1920	8,265,000	8,715,000	Apr. 30, 25,722,000

*The apparent discrepancy in stocks for the Rocky Mountain district is due to the fact that starting with the month of January, 1920, stocks are compiled by the survey to include crude oil held in storage by pipe line and other marketing companies, whereas they formerly included also stocks held by refineries receiving oil directly from the wells. This reduction in Rocky Mountain stocks is only apparent, the balance being held by refineries there.

output that the export trade has to be satisfied with a proportion that does not begin to measure up to the demand. So far as can be learned, the representative of the community of German agricultural interests which sought to cover 60,000 tons on direct negotiations here has not been able to commit the local houses to any sizable share of this quantity.

Kerosene is nominally steady for export at the decline of 1½ cents three weeks ago, with a fair but routine demand. Foreign interest in the lubricants continues keen, but only comparatively small stocks are obtainable. Practically the same situation applies to fuel oil. The repeated turning down of these inquiries during the last six months had little appreciable effect in discouraging the attempts to close. The casing situation is reported slightly easier, but supplies are hardly sufficient as yet to permit full-time operation of the plants.

Foreign exchange developments have been irregular in a dull market. Sterling weakened early in the interval but showed a recovering tendency toward the close. London advices indicated that the British government was encouraging private gold exports to this country, but the news had no appreciable effect upon the market. Another shipment of gold, amounting to $6,500,000, has arrived at San Francisco from Hongkong for account of a leading New York financial house and is understood to be part of the balance of collateral that was given to secure a credit granted to the Russian government by American and British bankers last fall. German marks show a slight net depreciation, due to heavier offers and keener selling by speculative interests. The tenor of late Berlin advices has been construed with less hopeful significance. Francs closed on a firmer basis, and notable improvement was displayed in lire.

Export Markets

The following export quotations are those of the New York Produce Exchange, which are furnished by the export department of the Standard of New Jersey, and Tide Water Oil companies.

Illuminating Oils

Quotations are based on the following quantities: Bulk, tank steamers, barrels; cargo lots, about 30,000 barrels; cases, cargo lots averaging about 100,000 cases. Quotations are for standard white 110 flash test.

	June 28	July 6
Bulk, gal., Bayonne	13.50	13.50
Barrels, gal., Bayonne, cargo	23.50	23.50
Cases, gal., Bayonne	26.00	26.00

Prices for water white oil (150 test) are 1 cent higher than those for standard white.

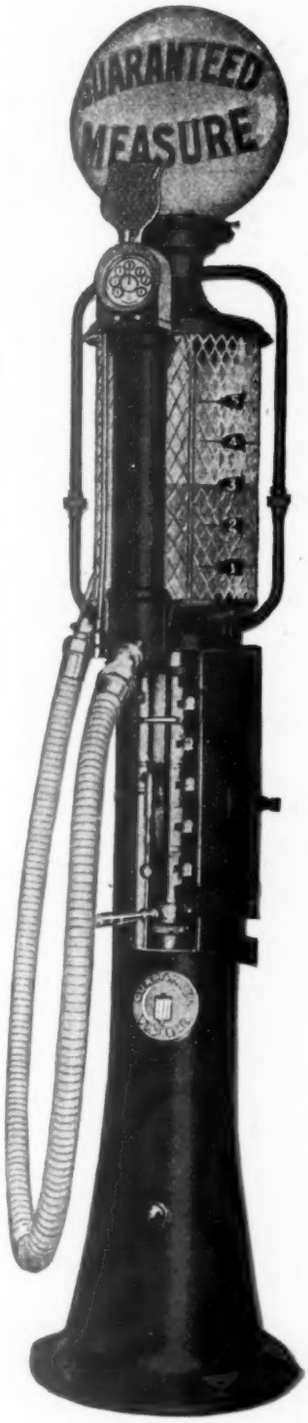
Gasoline-Naptha

Standard, New Jersey		
*U. S. Navy, bulk	23.00	24.00
†U. S. Navy, cases	39.25	40.25
*Export grade, bulk	24.50	25.50
*63-66 deg., bulk	27.50	28.50
*66-68 deg., bulk	28.50	29.50
Standard, Louisiana		
†Export grade, bulk	22.75	23.75
Tide Water		
*59-61 deg., bulk	28.50	29.50
†59-61 deg., cases	39.25	40.25

*f. o. b. Bayonne.
†f. o. b. Baton Rouge

To Get the Miles
Get the Gallons

Guarantee VISIBLE PUMPS



THE Guarantee Visible Pump is a great business builder. The glass measure shows the customer the exact amount of gasoline he is getting. He likes that; it encourages him to come back again and again and he does not forget to speak of it to his friends.

It Is Speedy

The Guarantee Visible Pump is speedy—one to five gallons perfectly filtered and plainly visible in the glass measure is only a matter of seconds.

It Is Accurate

The Guarantee Visible Pump is accurate—the vacuum system overcomes leakage and inertia troubles. There is no short stroke.

It Is Safe

The Guarantee Visible Pump is safe, simple in construction and easy to operate. Storage tank is under ground out of danger. The action is automatic after measuring hands have been set and is unaffected by climatic conditions.

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NATIONAL OIL EQUIPMENT CO
815 Hennepin Avenue,
Minneapolis, Minn.

Guarantee Liquid Measure Co., Rochester, Penna.

Crude Oil Quotations From All Fields

Price Changes From September 1, 1919, To Date

EASTERN FIELDS

Pennsylvania

1919—Sept. 2+25¢—Nov. 7+25¢—Dec. 22+25¢—Dec. 31+25¢
1920—Jan. 26+25¢—Feb. 5+25¢—Feb. 17+25¢—Feb. 27+15¢—Mar. 1+15¢—Mar. 2+15¢

Cabell

1919—Sept. 2+10¢—Nov. 7+15¢—Dec. 22+25¢—Dec. 31+15c
1920—Feb. 28+25¢—May 11+25c

Wooster

1919—Sept. 8+10¢—Nov. 21+25¢
1920—Jan. 12+25¢—Mar. 1+10¢—Mar. 10+25¢

Corning

1919—Sept. 2+10¢—Nov. 7+15¢—Dec. 22+25¢—Dec. 31+15¢
1920—Mar. 10+15¢—Mar. 19+10¢—Mar. 30+25¢—May 15+25¢

North Lima

1919—Sept. 8+10¢—Nov. 21+25¢—Dec. 22+25¢
1920—Jan. 12+25¢—Mar. 1+25¢—Mar. 10+25¢

South Lima

1919—Sept. 8+10¢—Nov. 21+25¢—Dec. 22+25¢
1920—Jan. 12+25¢—Mar. 1+25¢—Mar. 10+25¢

Indiana

1919—Sept. 8+10¢—Nov. 21+25¢—Dec. 22+25¢
1920—Jan. 12+25¢—Mar. 1+25¢—Mar. 10+25¢

Princeton

1919—Sept. 8+10¢—Nov. 21+25¢—Dec. 22+25¢
1920—Jan. 12+25¢—Mar. 1+25¢—Mar. 10+25¢

Somerset

1919—Sept. 2+10¢—Nov. 7+15¢—Dec. 22+25¢—Dec. 31+15¢
1920—Feb. 27+15¢—Mar. 10+25¢—May 10+25¢

Ragland

1919—Nov. 7+10¢—Dec. 22+25¢—Dec. 31+15¢
1920—May 10+35¢

Illinois

1919—Sept. 8+10¢—Nov. 21+25¢—Dec. 22+25¢
1920—Jan. 12+25¢—Mar. 1+25¢—Mar. 10+25¢

Plymouth

1919—Nov. 21+20¢—Dec. 22+25¢
1920—Mar. 1+20¢—Mar. 3+25c

MID-CONTINENT

Okla.-Kans.

1919—Nov. 19+25¢—Dec. 20+25¢
1920—Jan. 5+25¢—Feb. 27+25¢—Mar. 1+25¢

Healdton

1919—Feb. 21, reduced 25¢—Nov. 21+15¢—Dec. 19, +65¢—Dec. 22+25¢
1920—Jan. 8+25¢—Feb. 27+25¢—Mar. 3+25¢

Hewitt

1919—Dec. 2+40¢—Dec. 22+25¢
1920—Feb. 27+25¢—Mar. 1+25¢

TEXAS FIELDS

Burkburnett

1919—Oct. 1, reduced 25¢—Nov. 22+25¢—Dec. 20+25¢
1920—Jan. 5+25¢—Feb. 27+25¢—Mar. 1+25¢

Electra

1919—Nov. 22+25¢—Dec. 20+25¢
1920—Jan. 5+25¢—Feb. 27+25¢—Mar. 1+25¢

Corsicana Light

1919—Nov. 21+25¢—Dec. 18+25¢—Dec. 23+25¢
1920—Jan. 6+25¢—Feb. 27+25¢—Mar. 1+25¢

Corsicana Heavy

1919—Feb. 21, reduced 25¢—Nov. 21+10¢—Dec. 23+15¢
1920—Jan. 6+25¢—Feb. 27+25¢—Mar. 1+20¢

Strawn

1919—Nov. 21+25¢—Dec. 23+25¢—
1920—Jan. 6+25¢—Feb. 27+25¢—Mar. 1+25¢

Moran

1919—Nov. 21+25¢—Dec. 23+25¢
1920—Jan. 6+25¢—Feb. 27+25¢—Mar. 1+25¢

Ranger

1919—Nov. 19+25¢—Dec. 20+25¢
1920—Jan. 5+25¢—Feb. 27+25¢—Mar. 1+25¢

GULF COAST

Spindletop

1919—Jan. 14, reduced 30¢—Feb. 3, reduced 20¢—Mar. 19, reduced 30¢—Dec. 5+25¢—Dec. 20+25¢
1920—Jan. 7+25¢—Feb. 19+25¢—Mar. 3+25¢—Mar. 4+25¢—Apr. 13+50¢

Goose Creek

1919—Jan. 14, reduced 30¢—Feb. 3, reduced 25¢—Mar. 19, reduced 25¢—Dec. 5+25¢—Dec. 20+25¢
1920—Jan. 7+25¢—Feb. 19+25¢—Mar. 3+25¢—Mar. 4+25¢—Apr. 13+50¢

Sour Lake

1919—Jan. 14, reduced 30¢—Feb. 3, reduced 25¢—Mar. 19, reduced 25¢—Dec. 5+25¢—Dec. 20+25¢
1920—Jan. 7+25¢—Feb. 19+25¢—Mar. 3+25¢—Mar. 4+25¢—Apr. 13+50¢

Humble

1919—Jan. 14, reduced 30¢—Feb. 3, reduced 25¢—Mar. 19, reduced 25¢—Dec. 5+25¢—Dec. 20+25¢
1920—Jan. 7+25¢—Feb. 19+25¢—Mar. 3+25¢—Mar. 4+25¢—Apr. 13+50c

Batson

1919—Jan. 14, reduced 30¢—Feb. 3, reduced 25¢—Mar. 19, reduced 25¢—Dec. 5+25¢—Dec. 20+25¢
1920—Jan. 7+25¢—Feb. 19+25¢—Mar. 3+25¢—Mar. 4+25¢—Apr. 13+50¢

Saratoga

1919—Jan. 14, reduced 30¢—Feb. 3, reduced 25¢—Mar. 19, reduced 25¢—Dec. 5+25¢—Dec. 20+25¢
1920—Jan. 7+25¢—Feb. 19+25¢—Mar. 3+25¢—Mar. 4+25¢—Apr. 13+50¢

Dayton

1919—Jan. 14, reduced 30¢—Feb. 3, reduced 25¢—Mar. 19, reduced 25¢—Dec. 5+25¢—Dec. 20+25¢
1920—Jan. 7+25¢—Feb. 19+25¢—Mar. 3+25¢—Mar. 4+25¢—Apr. 13+50c

West Columbia

1919—Jan. 14, reduced 30¢—Feb. 3, reduced 25¢—Mar. 19—May 1, reduced 25¢
1920—Jan. 7+25¢—Feb. 19+25¢—Mar. 3+25¢—Mar. 4+25¢—Apr. 13+50¢

LOUISIANA FIELDS

Homer

1919—June 7+10¢—Dec. 3+25¢
1920—Jan. 6+25¢—Feb. 28+25¢

Bull Bayou

1919—Dec. 3+25¢
1920—Jan. 6+25¢—Feb. 28+25¢—Mar. 15+25¢

Caddo (above 38°

1919—Dec. 3+25¢—Dec. 22+25¢
1920—Feb. 28+25¢—Mar. 15+25¢

De Soto (above 38°)

1919—Dec. 3+25¢—Dec. 22+25¢
1920—Feb. 28+25¢—Mar. 15+25¢

Caddo (35° to 37.9°)

1919—Dec. 3+25¢
1920—Jan. 6+25¢—Feb. 28+25¢—Mar. 15+25¢

Caddo (32° to 34.9°)

1919—Dec. 3+25¢
1920—Jan. 6+25¢—Feb. 28+25¢—Mar. 15+25¢

Caddo Heavy

1919—Jan. 14, reduced 30¢—Feb. 4, reduced 25¢—Mar. 21, reduced 25¢—Dec. 3+25¢
1920—Jan. 6+25¢—Feb. 27+25¢—Mar. 15+25¢—May 3+25¢—May 10+25¢

Crichton

1919—Dec. 3+25¢—Dec. 22+25¢
1920—Jan. 6+25¢—Mar. 15+25¢

Pine Island

1919—Feb. 27+25¢—Dec. 3+25¢
1920—Jan. 6+25¢—May 3+25¢—May 10+25¢

WYOMING

Elk Basin

1919—Mar. 2+25¢—Nov. 21+25¢—Dec. 23+25¢
1920—Jan. 13+25¢—Mar. 16+25c

Grass Cree

1919—Mar. 2+25¢—Nov. 21+25¢—Dec. 23+25¢
1920—Jan. 13+25¢—Mar. 16+25¢

Big Muddy

1919—Mar. 2+25¢—Nov. 21+25¢—Dec. 23+25¢
1920—Jan. 13+25¢—Mar. 16+25¢

Salt Creek

1919—Mar. 2+25¢—Nov. 21+25¢—Dec. 23+25¢
1920—Jan. 13+25¢—Mar. 16+25¢

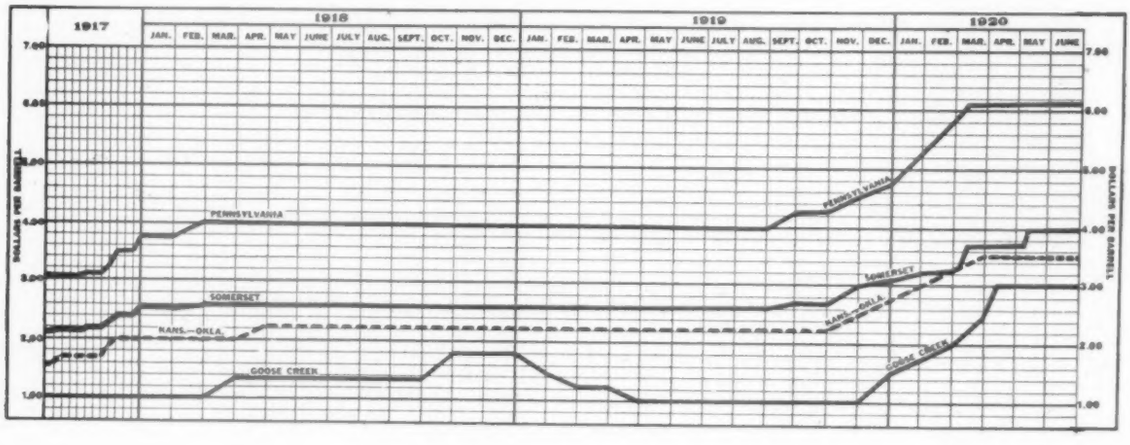
Lance Creek

1919—Mar. 2+25¢—Nov. 21+25¢—Dec. 23+25¢
1920—Jan. 13, 25¢—Mar. 16, 25¢

Rock Creek

1919—Nov. 21+25¢—Dec. 23+25¢
1920—Jan. 13+25¢—Feb. 4+10¢—Mar. 2+15¢—Mar. 16+25¢

Price Trend of Principal Crudes Through May, 1920



Crude Oil Prices

	June 21 1920	Jan. 1 1920	Jan. 1 1919
EASTERN FIELDS			
Pennsylvania	$6.10	$5.00	$4.00
Cabell	4.17	3.27	2.77
Wooster, O.	4.05	3.35	2.58
Corning	4.25	3.35	2.85
EASTERN FIELDS			
North Lima	3.73	3.13	$2.38
South Lima	3.73	3.13	2.38
Indiana	3 63	3.03	2.28
Princeton	3.77	3.17	2.42
Somerset	4.00	3.40	2.60
Ragland	2.10	1.70	1.25
Illinois	3.77	3.17	2.42
Plymouth	3.48	2.98	2.33
Canadian Petrolia	4.13	2.78	2.78
MID-CONTINENT			
Kans.-Okla.	$3.50	$2.75	$2.25
Healdton	2.75	2.00	....
Hewitt	3.50	2.75	....
TEXAS FIELDS			
North Texas			
Burkburnett	$3.50	$2.75	$2.25
Electra	3.50	2.75	2.25
Corsicana light	3.50	2.75	2.25
Corsicana heavy	1.75	1.05	1.30
Strawn	3.50	2.75	2.25
Moran	3.50	2.75	2.25
Ranger	3.50	2.75	2.25
Gulf Coast			
Spindletop	$3.00	$1.50	$1.80
Goose Creek	3.00	1.50	1.80
Sour Lake	3.00	1.50	1.80
Humble	3.00	1.50	1.80
Batson	3.00	1.50	1.80
Saratoga	3.00	1.50	1.80
Dayton	3.00	1.50	1.80
West Columbia	3.00	1.25	1.00
LOUISIANA FIELDS			
Homer	$3.25	$2.50	....
Bull Bayou	3.15	2.40	....
Caddo, above 38°	3.50	2.75	$2.25
De Soto, above 38°	3.40	2.65	2.15
Caddo, 35° to 37.9	3.40	2.65	2.15
Caddo, 32° to 34.9	3.35	2.60	2.10
Caddo, heavy	2.50	1.25	1.55
Crichton	3.00	2.25	1.75
WYOMING			
Elk Basin	$3.10	$2.10	$1.85
Grass Creek	3.10	2.10	1.85
Big Muddy	2.75	1.75	1.50
Salt Creek	2.75	1.75	1.50
Lance Creek	3.05	....	....
Rock Creek	2.75	....	....
Wyoming Black	1.75	....	....

CALIFORNIA

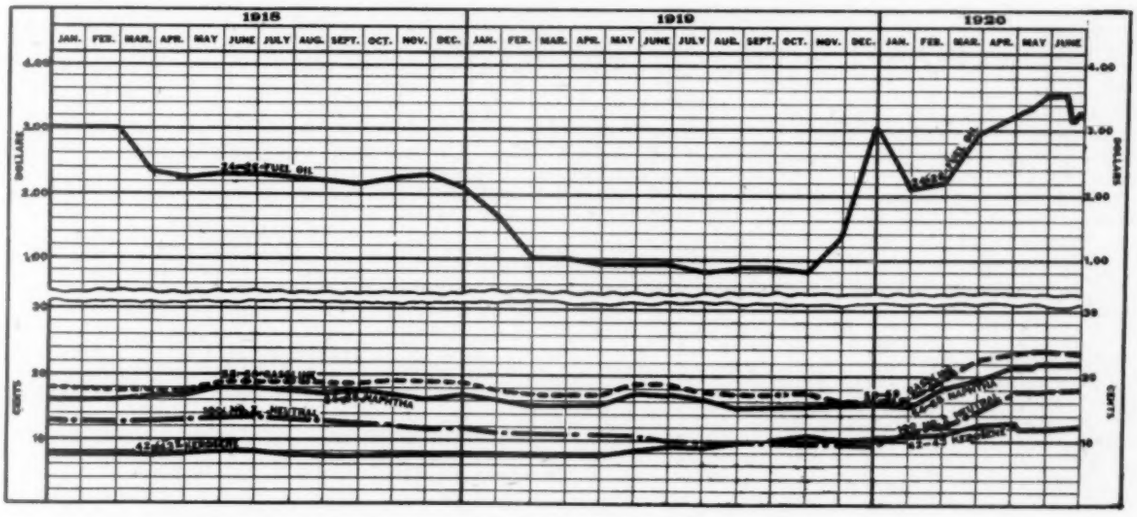
Effective January 30, the Standard Oil Company offered a new price schedule for crude at the well, the new schedule varying widely from the old one in effect since June 10, 1919, and advancing prices for higher gravity crudes very materially over the old figures, and to new record high levels for the California fields.

Effective March 17 the Standard of California advanced all grades in oil fields 25 cents a barrel over prices announced Jan. 31. Prices are as follows effective June 21:

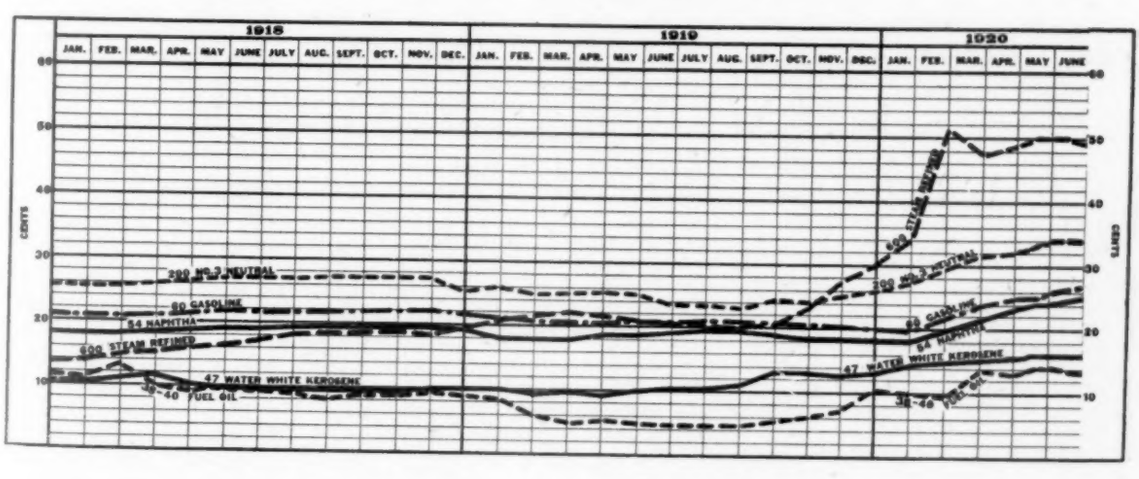
SAN JOAQUIN VALLEY AND WHITTIER-FULLERTON FIELDS

14 deg. to and including 17.9	$1.48 bbl.
18 deg. to and including 18.9	1.49 bbl.
19 deg. to and including 19.9	1.51 bbl.
20 deg. to and including 20.9	1.54 bbl.
21 deg. to and including 21.9	1.58 bbl.
22 deg. to and including 22.9	1.63 bbl.
23 deg. to and including 23.9	1.69 bbl.
24 deg. to and including 24.9	1.76 bbl.
25 deg. to and including 25.9	1.84 bbl.
26 deg. to and including 26.9	1.93 bbl.
27 deg. to and including 27.9	2.03 bbl.
28 deg. to and including 28.9	2.13 bbl.
29 deg. to and including 29.9	2.23 bbl.
30 deg. to and including 30.9	2.33 bbl.
31 deg. to and including 31.9	2.43 bbl.
32 deg. to and including 32.9	2.53 bbl.
33 deg. to and including 33.9	2.63 bbl.
34 deg. to and including 34.9	2.73 bbl.
35 deg. to and above	2.83 bb .

Refinery Prices at Oklahoma Plants



Refinery Prices at Pennsylvania Plants



OIL FINANCE

Big Currency Shifts Affect Stocks

IT was a see-saw market, with very little movement at that. Some leading operators predicted that the market should and doubtless would go up; professionals believed this and bought for a rise; prices firmed up and advanced; then call money rates jumped; the buying movement ceased, and stocks were down in the doldrums once more, with two holidays ahead. Meanwhile, the public shied off. During this buying movement, Mexican issues, General Asphalt, Carib Syndicate, Simms Petroleum, White Oil, Producers & Refiners, Guffey-Gillespie, Midwest Refining, Royal Dutch and Shell Transport were strong, and all moved up.

Financial House-Ordering

Bankers were busy on the mid-year interest and dividend settlements, which were said to aggregate some $350,000,000 thruout the country, and there were, besides, $40,000,000 of Belgian acceptances to meet. Then the Treasury withdrew nearly $100,000,000 in order to pay off about $200,000,000 of its certificates of indebtedness. The turnover of stocks on the New York Exchange for June was only 9,197,411 shares, reflecting the sluggish markets of the past six weeks.

Gates Oil Company Has Assets Of $5,492,463

ARDMORE, OKLA., June 30. — A condensed balance sheet of the Gates Oil Company as of April 30, 1920, shows: Property assets, $4,076,594; current assets, $770,949, making, with other items, a total of $5,482,463. Capital stock is $2,600,000; current liabilities, $48,675; dividends declared, $249,963; depreciation and depletion, $821,258; federal income taxes, $42,745; surplus, $1,677,819.

Income account for 11 months ended April 30 shows net sales, $1,330,545; net profit, $333,123; surplus paid in, $101,781, making a total of $438,177, from which were appropriated: Dividends, $95,000; dividends declared, $249,963; federal income tax reserve, $42,745; options lost, $750; total, $388,458, which, deducted from $438,177, leaves $49,719 surplus earned and paid in April 30.

Barnsdall Corp. Assets Pass $25,000,000

Beginning 1920 with a surplus of $4,728,516, Barnsdall Corporation during the three months ended March 31, 1920, after paying a dividend out of its earnings of $325,000 passed $294,848 to surplus, bringing it up to $5,023,365. From this was deducted $400,000, premium on 40,000 shares of Class B stock sold in April, 1920, leaving the adjusted surplus $5,423,365. The net income for the quarter was $619,848; total earnings were $1,161,951. Production for the three months was as follows (all companies): Oil, 620,383 barrels; gas, 892,673 thousand feet; gasoline, 184,054 gallons; 60 per cent zinc concentrate 2,465 tons; electricity, 377,943 k. w. Total assets as of March 31, 1920, were $25,443,771. Current assets were $3,633,515, against current liabilities of $1,455,258. Current liabilities show a reduction of about $500,000 from December 31, 1919.

Growth Of Island Oil And Refining Branch

Gross earnings of Island Oil & Transport Company in the three months ended March 31, 1920, were $1,374,522, and after all charges, including interest and sinking fund deduction, the net earnings available for the 2,250,000 shares, par $10, amounted to $350,706, equivalent to 15 cents a share for the period. This would indicate earnings at the annual rate of only 60 cents a share, but as a matter of fact the total earnings are expected to show much more than that. In the year ended February 29 last, the company showed 37 cents a share. Since the annual report was issued, and subsequent to the above three months' statement, the company has completed its second pipe line. This line not only extends from the oil fields to the loading station, but has been constructed 1¼ miles from shore to deep water. The double pipe increases the capacity of the company from 28,000 barrels to 47,000 barrels a day.

In the fiscal year ended with February, Island Oil produced about 6,000,000 barrels of oil, and in the current year it is expected to show more than twice that amount. In the first two months of 1920, shipments totaled 1,224,611 barrels, or at the annual rate of 7,357,000 barrels. President Stevens states: "Island Refining Corporation, whose stock is entirely owned by Island Oil & Transport, commenced operations on June 6 at the New Orleans refinery and expects to shortly put in operation its topping plant at the Palo Blanco terminals in Mexico." Shipments from the company's terminals in May were approximately 1,038,000 barrels.

Rumored Merger Of Union Oil, Phillips Pet

Since its incorporation, six months ago, the Union Oil Company of Delaware has continued its policy of absorbing desirable companies. At the time of organization it held a 25 per cent interest in the Union Oil Company of California and owned the Columbia Oil Company, a producing organization, with the bulk of its output in California. Union Oil has since acquired the Commonwealth Petroleum Company and has purchased production in West Virginia and Oklahoma which is being operated by the Eddystone Oil Company, a subsidiary. Net profits of Union Oil of Delaware for four months to April 30 were, at the annual rate of nearly $3,000,000, equivalent to $2.75 a share. Production of Union Oil Company of California in the first quarter of 1920 was 2,112,000 barrels, compared with 1,917,000 barrels in the same period in 1919. About three months ago the Union Oil of Delaware ordered four tankers, its initial equipment, deliverable early in 1921. Rumor is now current of a possible merger of Union Oil with Phillips Petroleum, each company having common banking interests. On February 20, 1920, Phillips Petroleum reported assets of $28,521,872, after its new financing of 128,000 shares at $26.25.

Imperial Oil Earns $8,530,000 In 1919

Next to the Standard Oil Company of Louisiana, Imperial Oil, Ltd., is the largest earner of the New Jersey subsidiaries. Unlike the Louisiana Company, it pays cash dividends, and is therefore a fruitful source of profit to the parent company. Its statement for 1919, just made public, shows that it had net earnings, before taxes, in the year ended December 31, 1919, of approximately $8,530,000. As Imperial pays dividends at the rate of 12 per cent per annum on its $30,000,000 capital stock, the parent company received approximately $2,880,000. New Jersey Standard's share of the entire $8,530,000 of earnings, representing an ownership of 80 per cent of Imperial Oil's stock, would be $6,824,158, compared with its proportion in 1918 of $5,554,844, after taxes.

If we estimate Imperial's tax deduction as the same as the previous year, $700,000, net earnings after taxes would be $7,830,000, as compared with $7,170,687 in 1918, or $26.10 a share on its $30,000,000 capital stock.

Imperial Oil's ownership in International Petroleum Company is not shown in the earnings statement but it is known to hold 80 per cent of International's stock, which has a present current market value

of approximately $73,000,000. Lacking confirmation, it is generally understood that International Petroleum now controls Tropical Oil Company, with its 2,000,000-acre Demares concession in Colombia, S. A.

South Penn Oil Co. Shows Deficit In 1919

In order to pay the usual 20 per cent dividend on its $20,000,000 outstanding capital stock, South Penn Oil Company had to draw on its surplus to the extent of $1,331,769 at the close of 1919, according to its statement just issued. Gross income for the year was $18,766,767; less operating expenses, taxes, depreciation and depletion, $16,098,532; net income, $2,668,235; dividends, $4,000,000; deficit, $1,331,765. Balance sheet as of December 31, 1919:

Assets

Property account	$19,587,622.24
Cash and accounts receivable	3,128,345.77
Material and mdse. and stock oil	3,385,531.18
Stocks, bonds and mortgages	10,181,523.48

Liabilities

Capital stock	$20,000,000.00
Accounts payable	1,531,036.65
Surplus	14,751,987.02
Total liabilities	$36,283,023.67

Middle States Oil Cuts Stock Melon July 12

On July 12, stockholders of Middle States Oil Corporation will have mailed to them a free stock allotment of 50 per cent of the capital stock outstanding. At the beginning of the present quarter, outstanding stock was $3,500,000 par value, to which has been added $1,700,000 of stock issued and sold and the proceeds utilized and on hand in the acquisition of property and in development work, making a total of $5,200,000 outstanding. To this will be added, on July 12, the 50 per cent distribution, amounting to $2,600,000, making the total outstanding stock at that time $7,800,000. The company announces that dividends will continue to be paid as usual, notwithstanding the stock distribution. Those who have held the stock of the company for two years will have received with this distribution 185 per cent in stock upon their original holdings, and in addition cash dividends amounting to 16 per cent annually, or 45 per cent on their original holdings.

Swiftsure Oil Transp. Offers $4,421,000 Notes

CHICAGO, June 30. — Chicago brokers are offering at prices ranging from 98.76 to 97.13 and interest to net 8 per cent, according to maturity, $4,421,000 convertible guaranteed 7 per cent gold notes of the Swiftsure Oil Transport, Inc. The guarantors, jointly and severally, are the France & India Steamship Corporation of New York, and France & Canada Steamship Company, Ltd., of Montreal. The proceeds are to be used in connection with the purchase thru the United States Shipping Board of 7 new tank steamships, each of 12,000 tons deadweight capacity. The guaranteeing companies operate 15 freighters of their own and 40 under charter. Their combined net worth as of December 31, 1919, after reserve for taxes, depreciation, etc., was $11,332,772. They have no funded debt. Average annual earnings of the two guaranteeing companies for the past three years have been $2,106,777. The Swiftsure company has authorized and outstanding: Preferred stock (nominal par value), 40,000 shares; common, 160,000 shares. Noteholders may at and before maturity convert their holdings into common stock at $90 a share or preferred stock at $100 a share.

Okla. Producers & Refiners' Surplus Nears Million

In a report released for publication July 1, 1920, President B. G. Dawes, of the Oklahoma Producing & Refining Corporation, states that since his election as president, January 27, 1920, he has not acquired sufficient knowledge of its operations for the year closing December 31, last to enable him to report in detail, but he submits the results of an audit made by public accountants containing balance sheet at March 31, 1920, together with the surplus account for the year closing December 31, 1919, and the first three months of the present fiscal year. A summary of this statement is given herewith.

Assets, March 31, 1920

Operated properties, as revalued by company's officials Dec. 31, 1919, with additions since at cost		$25,837,777
Undeveloped lands and leases		856,916
Refinery, buildings, pipe lines, tank cars, etc.		2,977,389
Less reserve for depletion and depreciation		4,149,074
		$25,523,009
Current assets:		
Inventories, 645 oil stocks, $503,545; accounts receivable, $844,299; cash, $312,664		$2,406,235
Deferred charges		48,293
Total assets		$27,977,538

Liabilities

Capital stock: Preferred, 600,000 shares of $5 each (all outstanding)	$ 3,000,000
Common — Authorized, 4,400,000 shares of $5 each, $22,000,000; outstanding, 4,308,200 shares	21,541,000
	$24,541,000
Dividend scrip, convertible into common stock at par	348,000
Current liabilities: Notes, $1,003,000; accounts, $899,990; due Okla. P. & R. Co. of N. Y., $118,069; dividends unpaid, $126,960	2,148,020
Reserve for insurance	18,371
Surplus, before providing for depletion, depreciation and federal taxes for first 3 months of 1920	922,146
Total	$27,977,538

Surplus Account

Balance December 31, 1919, $171,733; added valuations, $2,250,000; earnings before depletion, depreciation, development, etc., 1919, $3,845,004; total, December 31, 1919, $6,266,737; from which deduct depletion and depreciation, $2,561,738; development, $1,139,897; cancellation of leases, $173,673; total, $3,875,309; balance, surplus, December 31, 1919	$ 499,428
Earnings, 3 months ended March 31, 1920, $1,339,196; less development, $337,303, and cancellation of leases, $21,395	980 498
	$1,479,926
Less dividends	557,780
Surplus March 31, 1920, before depletion, etc.	$ 922,146

Mr. Dawes further says: "This corporation owns and operates a complete refinery at Muskogee, Okla., and also owns leases on 80,214 acres of land, 57,273 acres being owned wholly by the company, while 22,939 acres are held in connection with other interests. In addition, the company owns in fee 1,207 acres which are operated for oil and gas, also 1,795 producing wells, 1,515 wholly owned and 280 with other interests, producing net during the first three months of the fiscal year 566,234 barrels of crude oil."

Financial Notes

Fred G. Clark Company.—The offering of 40,000 $10-shares, at $32 a share, has all been absorbed, it is announced.

Shaffer Oil & Refining.—Gross earnings, twelve months ended May 31, 1920, $10,807,497; net, before federal taxes, $3,857,512.

Island Oil & Transport.—New York Stock Exchange has authorized the listing of $22,500,000 of temporary interchangeable v. t. c. for common stock (par $10). Gross income, three months ended March 31, 1920, $1,374,522; operating expenses, $661,333; war taxes, $171,692; interest, $119,299; net income, $422,198; extinguishment of debt discount, $71,492; balance, $250,706; previous surplus, $761,234; profit and loss surplus, $1,111,940.

Mexican Eagle Oil.—Gross income, 1919 (ending June 30), $18,919,399; 1918, $14,558,537; 1917, $10,376,140; 1916, $9,041,205. Net: 1919, $18,597,213; 1918, $14,117,721; 1917, $9,935,324; 1916, $8,532,183.

Capital Stock Tax.—On or before July 31, 1920, every foreign and domestic corporation carrying on or doing business in the United States must file report for capital stock tax, covering the tax year ending June 30, 1921.

Tide Water Oil.—Listing of $8,617,400 additional common stock (authorized, $100,000,000) par $100, has been authorized by New York Stock Exchange. Of the total amount realized, about $7,000,000 will go into expansion projects at once and the balance later.

Union Oil of Cal.—Stockholders representing 89 per cent of outstanding stock voted unanimously June 16 to increase the capital stock from $50,000,000 to $100,000,000. It is understood that the new capital will be used solely for expansion and that there will be no stock dividend.

Simms Petrodeum.—Is offering thru Philadelphia brokers $600,000 equipment trust certificates to yield 8 per cent.

How Oil Shares Moved Last Week

NEW YORK STOCK EXCHANGE

	Par Value	High 1920	Low 1920	Week's Sales	Price June 26	Week's High	Week's Low	Price July 2	Week's Gain or Loss
Caddo Oil & Refg	$100	28¼	15¼	1,900	19	19	18	18½	—½
California Petroleum	100	46	26	3,100	.....	32¾	29½	32½	.....
Mex. Petroleum	100	222	161	23,100	179	189	176¼	188⅞	+9⅞
Middle States Oil	10	71¾	22¾	30,300	28¾	30⅝	27¾	30¼	+1½
Ohio Cities Gas	25	50⅞	37	5,300	40⅝	40½	39⅞	.....	.....
Okla. Prod. & Refg	5	5¾	3⅞	5,500	4¼	4⅞	4	4	—¼
Pan.-Amer. Petroleum	50	116⅜	71¾	38,200	102	105¼	100¾	105	+3
Pierce Oil Corp	25	23¼	18½	3,400	15¾	15⅞	15⅝	15⅞	+⅛
Royal Dutch, N. Y.	13.15	123¾	93⅞	16,600	114	114½	112¼	112¾	—1¼
Shell Transport	10	90¼	72⅝	1,700	73	73½	72¼	73⅛	+⅛
Sinclair Consol	No par	48¾	28¾	31,200	31½	31⅞	30⅛	31⅞	+⅜
Standard Oil, N. J	100	850	625	Odd lots	651	659	650	659	+8
do. pfd	100	113¾	101	17,800	102½	104⅞	102⅝	104	+1½
Texas Company (new)	100	57¾	41⅝	30,200	45	47	44¾	47	+2
Transcontinental Oil	No par	38¾	13¼	10,100	15¾	.....	.....	16¼	+½
Union Oil	No par	38	27	5,800	32	32	31¼	31½	—½

NEW YORK CURB MARKET

Cities Serv. Bkrs	10	44⅛	35	600	.....	35¾	35¾	.....	.....
Cosden & Co	5	10¼	6⅜	1,500	.....	7⅛	6⅞	.....	.....
Elk Basin	5	11¼	7½	2,000	7¾	7¾	7⅞	.....	.....
Federal Oil	5	4¾	2	6,000	2⅜	2⅜	2¼	2⅜	.....
Glenrock Oil	10	3⅞	1⅜	9,000	2⅜	2½	2⅜	2⅜	—¼
Guffey-Gillespie	No par	39¼	26	700	.....	26	25½	.....	.....
Houston Oil	100	151	57	400	.....	75	7½	.....	.....
Intern. Petroleum	5	77	33½	2,500	35½	35½	33¼	35½	.....
Invinc. Oil & Refg	50	47	27	12,300	.....	36½	34½	.....	.....
Island Oil & Trans	10	8	4½	No sales reported.					
Merritt Oil	10	22⅜	14	1,100	15½	16½	15¼	16	+½
Midwest Refg	10	180	121	1,960	143	148	143	148	+5
Pennok Oil	10	9½	5	200	.....	6	6	6	.....
Phillips Petroleum	No par	89½	30¼	No sales reported.					
Prodrs. & Refrs	10	10½	7	6,500	7⅜	7½	6⅞	†7	—⅜
Sapulpa Refg	5	7⅛	5½	6,200	5½	6	5⅜	6	+½
Salt Creek Prod	25	56	30½	1,300	.....	33½	32¼	33⅜	.....
Simms Petroleum	No par	73½	14	11,900	17¼	17½	15¾	16½	—¼
White Oil	No par	50	19	1,800	.....	19¾	19	19¼	.....

†New Low.

PITTSBURGH STOCK EXCHANGE

Arkansas Nat. Gas	10	45	11¼	9,980	12⅜	12½	11¼	12¼	—⅛
Arkansas Nat. Gas, pfd.	100	150	92	No sales reported.					
Barnsdall Corp. A	25	50¾	39	25	39	40¾	40¾	40¾	+1¾
Guffey-Gillespie Oil	No par	40	25½	1,980	26	26	25⅝	26	.....
Kay County Gas	1	2½	1½	130	2	2	2	2	.....
Lone Star Gas	25	45½	25	2,054	26	27	26	27	+1
Man. Light & Heat	50	61¾	51	229	52¾	53	51¾	53	+¼
Marland Refining	5	6½	4	4,265	4⅞	4⅞	4½	4½	—⅜
Ohio Fuel Oil	1	34⅞	22½	135	23½	23	22½	22½	—1
Ohio Fuel Supply	25	55	44	102	51	51	*50	51	.....
Oklahoma Nat. Gas	25	43	31¼	976	33¼	32	31¼	31⅞	—1⅜
Oklahoma Prod. & Refg	5	6½	4	600	.....	4⅛	4	4⅛	.....
Pittsburgh Oil & Gas	5	16	11	5,089	14	15¾	14¾	15	+1
Union Nat. Gas	100	130	117½	40	122	121	*117½	120	—2
Wyoming Fuel Oil	1	2	2	No sales reported.					
Arkansas Gas rights	.....	5	⅞	4,580	1⅜	1¼	⅞	1⅛	—¼
Barnsdall B	25	46	36	525	39	39	39	39	.....
Transcontinental Oil	No par	28½	14	No sales reported.					

*Ex. Dividend.

PITTSBURGH CURB MARKET

Allied Oil	1	1.25	.24	600	.24	.28	.27	.27	+3
Atlantic Gulf Oil	100	88½	84½	No sales reported.					
Boston-Wyoming	1	1.25	.62	100	.87	.87	.87	.87	.....
Columbia Syndicate	10	11	9¼	No sales reported.					
Duquesne Oil	5	7½	3¾	1,205	3⅞	4	3¾	3⅞	.....
Homer Union Pet	1	1.25	.25	300	.25	.25	.25	.25	.....
Liberty-Texas	1	1.75	.80	No sales reported.					
Gulf Oil Corp	100	450	400	No sales reported.					
Lou.-Penn	1	3¾	1½	200	1¾	1¾	1¾	1¾	.....
Marshall Oil	10	13½	10	No sales reported.					
Mexico-Wyoming	1	1.45	.55	200	.67	.60	.60	.60	—7
Omar Oil & Gas	10	7¼	3¼	200	4	4¼	4¼	4¼	+¼
Salt Creek Consol	10	21	13½	.....	13½	No sales reported.			
States Oil	5	160	125	No sales reported.					
Tropical Oil	25	23	16½	2,364	20	21	20½	20½	+½
Twin City Oil	1	.30	.15	12,000	.18	.18	.17	.18	.....

Standard Oil Stocks

Standard Oil securities are dealt with to only a small extent on the New York curb market, the great majority of sales being made over the counters of investment bankers. For this reason no record can be obtained of the total volume of sales from day to day to indicate the activity of any particular stock. Below are bid and asked quotations prevailing on the curb market at the close of business on the date given, the same quotations prevailing in the majority of unrecorded transactions:

STANDARD OIL GROUP

	July 2 Bid	July 2 Asked	1920 High	1920 Low
Anglo-American	22½	23½	31	19
Atlantic Refg	1,150	1,250	1,650	1,150
Buckeye Pipe	84	86	102	84
Continental Oil	105	115 (b)	575	530
Galena-Signal	40	45	97	40
Illinois Pipe	150	155	178	100
Ohio Oil	270	280	395	†270
Penn.-Mex	.....	.....	74	38
Prairie O. & G.	545	560	690	520
Prairie Pipe	193	198	280	190
South Penn	265	275	345	265
S. O. California	310	314	338	305
S. O. Indiana	640	660	760	†640
S. O. Kansas	510	530	750	†510
S. O. Kentucky	350	375	485	350
S. O. New York	380	385	460	†280
S. O. Ohio	420	440	560	420
Union Tank Car	105	110	115½	103
Vacuum Oil	370	380	435	330

†New Low

†New Low

UNLISTED SECURITIES

By Carl H. Pforzheimer & Co.

	Par Value	July 2 Bid	July 2 Asked	1920 High	1920 Low
Gulf Oil Corp	$100	410	420	550	394
Humble O. & R.	100	240	260	323	†240
Magnolia Pet.	100	470	490	450	360
Tex. Pac. C. & O.	100	50¾	51	139	40½

†New Low

MISCELLANEOUS STOCKS

The following are bid and asked prices ruling at the close of business on the date given, on the stock markets indicated by reference marks, with high and low levels reached so far this year:

	Par Value	July 2 Bid	July 2 Asked	1920 High	1920 Low
Cities Serv. (a)	$100	326	328	.....	.....
do. pfd. (a)	100	64¾	65	74	64
Nat. Refg. (a)	100	....	235	*410	355
do. pfd. (a)	100	105	120	126	97
N. Am. O.& R. (b).	5	3⅛	3½	.....	.....
Para. Refg. (a)	25	25	....	27½	25
do. pfd. (a)	100	....	100	100¼	100
India. Refg. (c)	5	7.37½	7.50	....	....
Marland Refg. (c).	5	4.25	4.75	....	....

*Before stock dividend. (a)Cleveland. (b) New Yo
Curb. (c)St. Louis.